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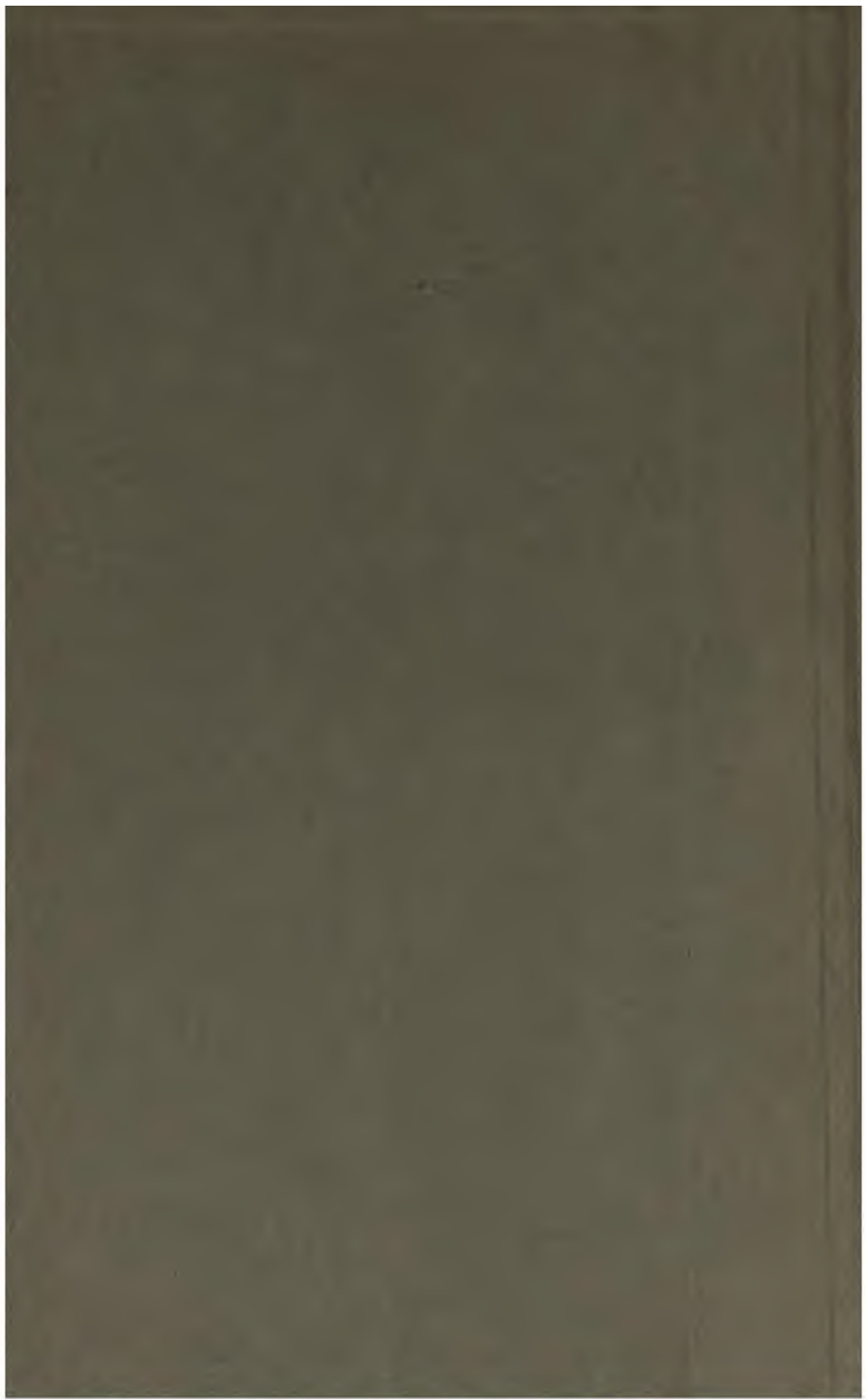
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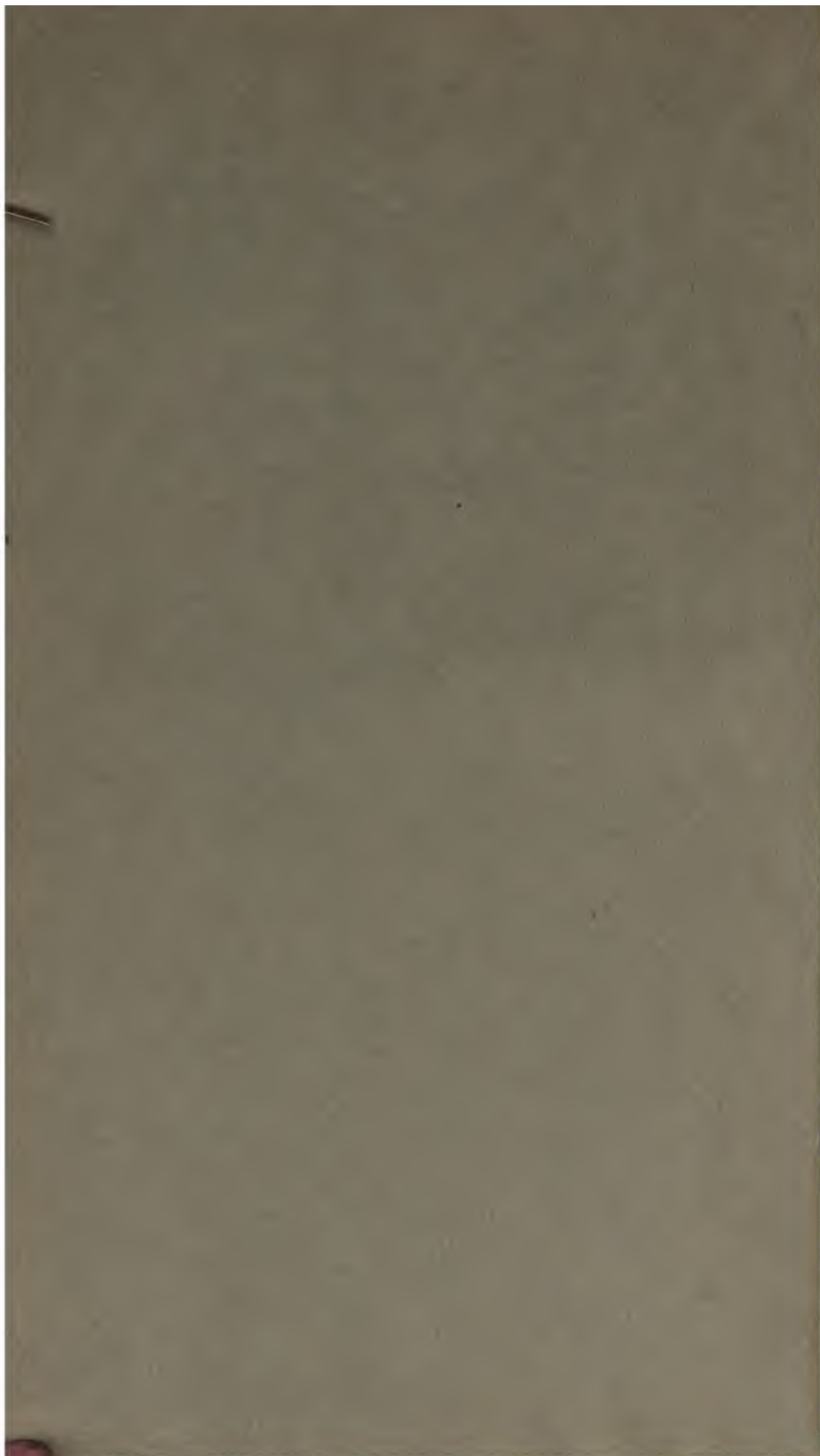
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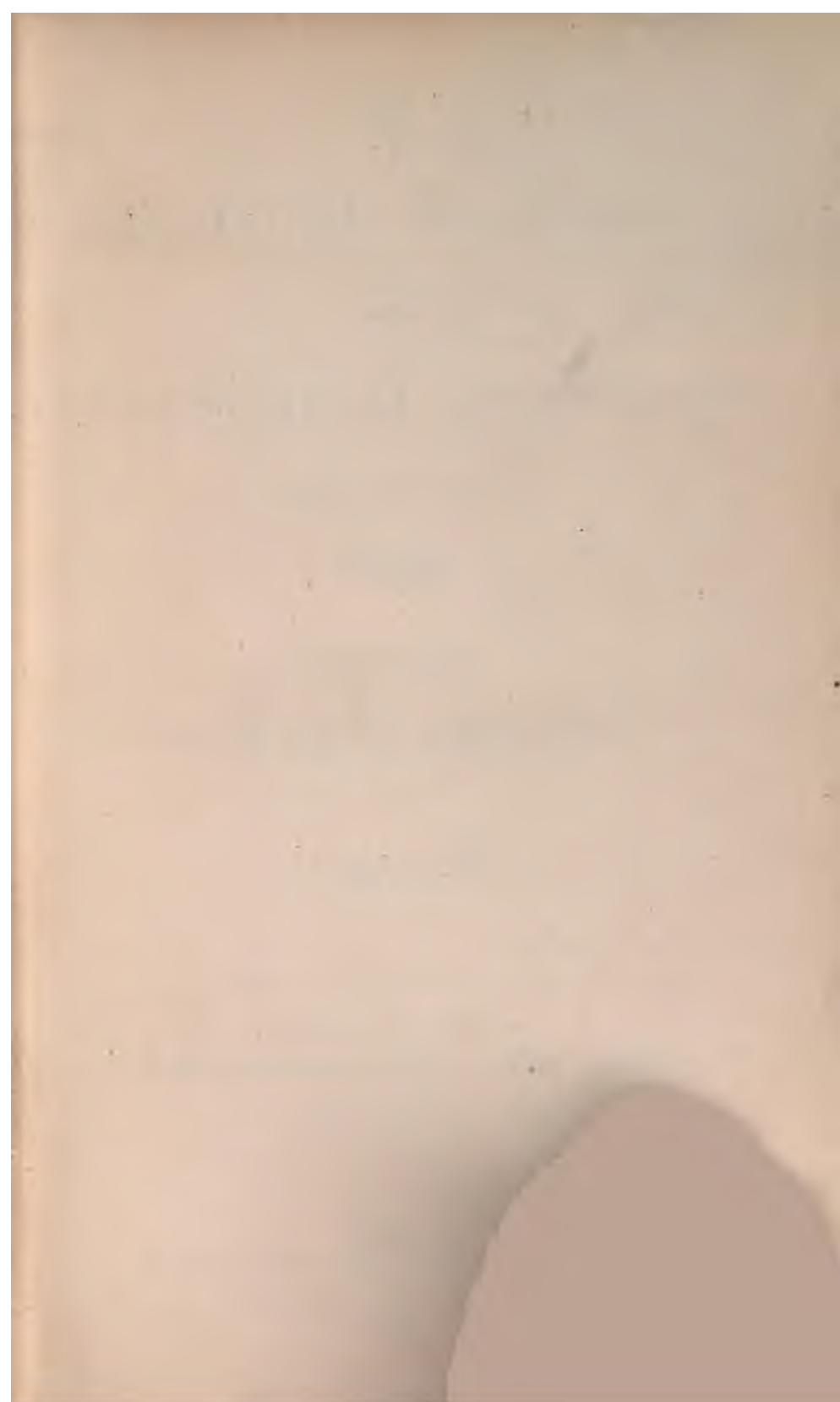




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THE
NAUTICAL ALMANAC
AND
ASTRONOMICAL EPHEMERIS
FOR THE YEAR
1856
TO WHICH IS ADDED
A SUPPLEMENT,
AND
AN APPENDIX.

PUBLISHED BY ORDER OF
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ALPHABETICALLY ARRANGED.

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the small, the Page of the Preface; and the Arabic, the Page of the Book.*

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Translated and illustrated with notes by G. B. Airy, Esq., Astronomer
Royal.
- On new Tables of the Moon's Parallax to be substituted for those of Burekhardt,
by J. C. Adams, Esq., M.A., F.R.S., &c. &c.
-

P R E F A C E.

WITH the exception of the omission of the Minor Planets, the contents of the NAUTICAL ALMANAC and ASTRONOMICAL EPHEMERIS for the year 1856 are the same generally as those of the preceding year; the additions are a Supplement containing Elements and Ephemerides of the newly-discovered Planets for the year 1853, and an Appendix containing two papers, the first, "On a new Method of computing the Perturbations of Planets," by J. F. ENCKE; Translated and illustrated with notes by G. B. AIRY, ESQ., ASTRONOMER ROYAL, and the second, "On new Tables of the Moon's Parallax to be substituted for those of BURCKHARDT," by J. C. ADAMS, ESQ., M.A., F.R.S., &c. &c.

The Minor Planets, Vesta, Juno, Pallas, and Ceres, have been omitted for the purpose of correcting their Elements by means of the numerous observations now available; the corrected Elements and Ephemerides will be published in a supplemental form hereafter.

The Sun's Longitude from the *Mean* Equinox, the Latitude, and the Earth's Radius Vector have been deduced from the New Tables appended to *Ephemeridi Astronomiche di Milano per l'Anno 1833*, (Milano, 1832,) using a difference of Meridians of $36^m 45^s$.

The Longitude and Radius Vector have been computed accurately from the Tables for the Mean Noon of every 6th day of the year, and interpolated with fourth differences for each day.

The Latitude of the Sun, depending on the attraction of the Moon, was computed for every day, and that part depending upon the Planets, Venus and Jupiter, was obtained for each sixth day and interpolated.

The Nutations of the Obliquity of the Ecliptic ($\Delta \omega$) and of Longitude (ΔL), have been derived from MS. Tables, constructed by the late Mr. JAMES ERFS, according to the following formulæ:

$$\Delta \omega = 9'' \cdot 2500 \cos \varnothing - 0'' \cdot 0903 \cos 2 \varnothing + 0'' \cdot 0900 \cos 2 \zeta + 0'' \cdot 5447 \cos 2 \odot$$

$$\Delta L = -17'' \cdot 2985 \sin \varnothing + 0'' \cdot 2082 \sin 2 \varnothing - 0'' \cdot 2074 \sin 2 \zeta - 1'' \cdot 2550 \sin 2 \odot$$

where \varnothing is the Mean Longitude of the Moon's ascending Node, ζ the true Longitude of the Moon, and \odot the true Longitude of the Sun (*Ast. Soc. Cat.*, pages xiv and xv); but the terms depending on 2ζ have been omitted.

The Mean Obliquity of the Ecliptic has been taken = $23^\circ 27' 29'' \cdot 21$, on January 1, 1856, and the Mean Annual diminution = $0'' \cdot 457$. (*BESSEL'S Tab. Reg.* page 9.)

The Sun's Right Ascension and Declination were computed independently for the Mean Noon of every sixth day, and interpolated for each day with fourth differences; the correction of the Declination for Latitude was then applied to each day separately.

The Semidiameter of the Sun at the Earth's Mean Distance = $16' 1'' \cdot 82$, being

the result of the 12 years' Observations, 1836 to 1847, made at the Royal Observatory, at Greenwich.

The Equatorial Horizontal Parallax of the Sun, at the Earth's Mean Distance has been taken = $8'' \cdot 5776$, as deduced by Professor ENCKE, from the Transits of Venus in 1761 and 1769. (*Der Venusdurchgang von 1769, &c.* Gotha, 1824. page 108.)

The Constant of Aberration = $20'' \cdot 42$. (Preface to *B. A. Cat.*, page 21.)

The Sidereal Time at Mean Noon = $\frac{\text{Sun's Mean Longitude} + \text{Nutation.}}{15}$

According to BESSEL (*Tab. Reg.* page XXIV), the Mean Longitude of the Sun, at Paris Mean Noon of January 0^d of the year 1800 + t , is

$$279^{\circ} 54' 1'' \cdot 36 + t \cdot 27'' \cdot 605844 + t^2 \cdot 0'' \cdot 0001221805 - f \cdot 14' 47'' \cdot 083,$$

where f denotes, for the 19th century, the number of years from the year immediately preceding 1800 + t , which is divisible by 4 without a remainder. Assuming the Meridian of Greenwich to be $9^m 21 \cdot 5$ West of that of Paris, and altering the epoch to the Mean Noon of January 1 of the year 1800 + t , the Sun's Mean Longitude (M) for the meridian of Greenwich is hence found equal to

$$280^{\circ} 53' 32'' \cdot 75 + t \cdot 27'' \cdot 605844 + t^2 \cdot 0'' \cdot 0001221805 - f \cdot 14' 47'' \cdot 083,$$

and we have, for the Mean Noon of any day (n) of the year 1800 + t ,

$$\text{Sidereal Time} = \frac{M}{15} + n \cdot 3^m 56 \cdot 555348 + \text{Nutation in R.A.}$$

The Sun's Geocentric Co-ordinates have been computed from the following formulæ :

$$X = r \cos \odot$$

$$Y = r \sin \odot \cos \omega$$

$$Z = r \sin \odot \sin \omega = Y \tan \omega$$

in which r represents the Radius Vector of the Earth, \odot the Sun's true Longitude from the true Equinox, and ω the apparent obliquity of the Ecliptic.

The Reductions ΔX , ΔY , ΔZ of the co-ordinates to the Mean Equinox of January 1 have been obtained from similar formulæ; only using the Sun's Longitude from the Mean Equinox and the Mean Obliquity of the Ecliptic of January 1, 1856.

The Longitude of the Moon from the Mean Equinox, and the Latitude, have been derived from BURCKHARDT'S "*Tables de la Lune*" (Paris, 1812), using a difference of Meridians = $9^m 21 \cdot 5$: The arguments of the 32 minor equations of longitude have been taken from the Tables for each tenth Noon, and interpolated for every Noon by the continued addition of one-tenth of the difference, retaining throughout an additional figure; and the arguments of the other Equations have been taken from the Tables for each fifth Noon, and in a similar manner interpolated for every Noon and Midnight: with the arguments so formed, the 32 minor equations have been computed for every Mean Noon, their sums interpolated for every Midnight with fourth differences, and the remaining portion of the computation of the Longitude and Latitude performed independently for every Mean Noon and Midnight of the Year; second differences having been taken into account wherever the irregular variation of the Equations rendered such a correction appreciable. The Longitude has then been reduced to the True Equinox, and the results differenced to the fourth order, and carefully examined. Wherever the progres-

sion of the fourth differences indicated a probable error of more than $0''\cdot5$ the computations have been re-examined.

The Horizontal Parallax of the Moon has been obtained from Mr. ADAMS'S Tables in the Appendix to the present volume, and the Semidiameter by assuming $0\cdot2725$ as its ratio to the Horizontal Parallax.

The Right Ascensions and Declinations have been computed for each noon and midnight, examined by means of differences to the fourth order, and interpolated for every hour. From these have been deduced the Right Ascensions and Declinations at Transit on each day of the year.

The Lunar Distances from the Sun have been computed from Longitudes and Latitudes for every six hours, examined by means of differences to the second order, and interpolated for every three hours. Those from the Planets and Stars have been computed from Right Ascensions and Declinations for every six hours, examined by means of differences to the second, third, and sometimes fourth order, according to the irregularity of their variation, and interpolated for every three hours.

The Places of Mercury, Venus, and Mars, *from the Mean Equinox*, have been derived from LINDENAU'S Tables,* assuming Greenwich to be $42^m\ 56^s$ West of Seeberg; and those of Jupiter, Saturn, and Uranus, from BOUVARD'S new Tables,† with a difference of meridians of $9^m\ 21^s\cdot5$; substituting only for Table XLII of Saturn, Mr. Adams's correct Table given in the NAUTICAL ALMANAC for 1851, page xiv.

For Mercury, the Perturbations were obtained immediately from the Tables for each alternate Mean Noon, and interpolated with first differences; the remainder of the calculations was performed independently for every Mean Noon.

For Venus, the Heliocentric Longitude from the *True Equinox*, Latitude and Radius Vector, were computed independently for Mean Noon of every eighth day then interpolated with fourth differences for each day. The Geocentric places were computed for every fourth day, and the intermediate values obtained by interpolating with fourth differences.

For Mars, the Heliocentric Longitude from the *True Equinox*, Latitude and Radius Vector, were obtained independently for Mean Noon of every twelfth day, and interpolated with fourth differences for each day. The Geocentric places were computed for every sixth day, and interpolated with fourth differences.

For Jupiter, Saturn, and Uranus, the Heliocentric Longitude from the *True Equinox*, Latitude and Radius Vector, were computed for Mean Noon at intervals

* Investigatio nova Orbitæ a Mercurio circa Solem descriptæ, accedunt Tabulæ Planete ex Elementis recens repertis et Theoria Gravitatis Illust. De Laplace constructæ. Auctore BERNHARDO DE LINDENAU. Gothæ, 1813. 4to.

Tabulæ Veneris novæ et correctæ ex Theoria Gravitatis clarissimi De Laplace et ex Observationibus recentissimis in specula Astronomica Seebergensi habitis erutæ. Auctore BERNHARDO DE LINDENAU. Gothæ, 1810. 4to.

Tabulæ Martis novæ et correctæ ex Theoria Gravitatis clarissimi De Laplace et ex Observationibus recentissimis erutæ. Auctore BERNHARDO DE LINDENAU. Eisenberg, 1811. 4to.

† Tables Astronomiques publiées par le Bureau des Longitudes de France, contenant les Tables de Jupiter, de Saturne et d'Uranus, construites d'après la Théorie de la Mécanique Céleste. par M. A. BOUVARD. Paris, 1821. 4to.

of thirty days, and interpolated, for each day, with second differences. The Geocentric places were obtained independently for every sixth day, and interpolated for every day, using differences to the fourth order.

The Ephemeris of each of the Planets, Mercury, Venus, Mars, Jupiter, Saturn, and Uranus, at the Time of Transit, has been computed for each day of the Year from their Places at Mean Noon.

The Semidiameters of the Planets, at the Mean Distance of the Earth from the Sun, have been adopted as follow :

Mercury, Eq. Sem. $3^{\circ}23'$ (Lindenau's *Tables of Mercury*, page 38).

Venus, Eq. Sem. $8^{\circ}25'$ (Delambre's *Astronomy*, vol. ii. page 620).

Mars, Eq. Sem. $4^{\circ}435'$ (Littrow's *Astronomy*, vol. ii. page 389).

Jupiter, Eq. Sem. $99^{\circ}704'$ (*Mem. Ast. Soc.*, vol. iii. page 301).

Saturn, Eq. Sem. $81^{\circ}106'$ (*Ast. Nach.* No. 189).

Uranus, Eq. Sem. $37^{\circ}25'$ (Delambre's *Astronomy*, vol. ii. page 620).

The Eclipses of Jupiter's Satellites have been computed from "*Tables Ecliptiques des Satellites de Jupiter, d'après la théorie de leurs attractions mutuelles et les constantes déduites des Observations.* Par le Baron DAMOISEAU. Publiées par le Bureau des Longitudes. Paris 1836," using $9^m 21^s \cdot 5$ for the difference of meridians.

For the first Satellite, Equations 4 and 5 have been taken from the Tables for every Eclipse, and the other Equations for each sixth Eclipse. For the second Satellite, Equation 4 has been taken for every Eclipse, and the others for each fourth Eclipse. For the third Satellite, Equation 5 has been taken for every Eclipse, and the others for each second Eclipse. For the fourth Satellite, the whole of the Equations have been taken from the Tables for each Eclipse. In each case the computation has been finished by interpolating, with second differences, the sums of those equations not taken from the Tables for each Eclipse.

It was formerly the practice to direct the attention of observers to those Eclipses only which happened when Jupiter was not less than 8° above the Horizon and the Sun 8° below. It appearing, however, by a paper read before the Royal Astronomical Society on April 13, 1838, (*Ast. Soc. Notices*, vol. iv. p. 131,) that Mr. RIDDLE observed the reappearances of the First and Second Satellites at Greenwich on April 9, 1838, without difficulty, when the Sun was much less than 8° below the Horizon, a new limit was adopted in the year 1842, and while the asterisk has been retained to indicate the Visibility agreeably to the old limits, a dagger is used to indicate that Jupiter is *above* the Horizon and the Sun *below*.

For the Configurations and Occultations of the Satellites, as well as the Transits of the Satellites and their Shadows over the disc of the Planet, Mr. WOOLHOUSE'S Tables in the APPENDIX to the NAUTICAL ALMANAC for 1835 have been used, with the exception of Table II. of each Satellite, which has been reconstructed to adapt it to DAMOISEAU'S New Tables.

The Elements at page 529, for determining the appearance of Saturn's Ring, have been calculated by means of the Formulas* at page viii. of the NAUTICAL

* See Errata in the NAUTICAL ALMANAC for 1840, page xv.

ALMANAC for 1836, adopting the late Professor BESSEL's determinations of the values of Ω , i and a' viz. :—

$$\begin{aligned} \Omega &= 166^{\circ} 53' 8'' \cdot 9 + 46'' \cdot 462 (t-1800) \\ i &= 28 10 44 \cdot 7 - 0 \cdot 350 (t-1800) \\ a' &= 39'' \cdot 308 \end{aligned} \left. \begin{array}{l} \\ \\ \end{array} \right\} \textit{Ast. Nach.}, \text{ No. 274, col. 167.}$$

(Ast. Nach., No. 275, col. 170),

the mean distance of the Planet from the Sun being taken = $9 \cdot 54301$, agreeably to BOUVARD's Tables of Saturn, instead of $9 \cdot 5421889$, the value used by BESSEL in the reduction of his observations.

The Mean Places of 84 of the 100 Principal Fixed Stars for Jan. 1, 1856, have been derived from a manuscript by Mr. Adams, now preparing for publication, and the remaining 16 from the fundamental Catalogue for 1840, contained in the NAUTICAL ALMANAC for 1848, pages 436 to 441, by means of the Formulæ at page xiv of the PREFACE to the *Second Edition* of the NAUTICAL ALMANAC for 1834.

The Logarithms of A, B, C, D, at page XX. of each Month, have been computed agreeably to the Formulæ at page 399, omitting only in the Values of C and D the terms $-0 \cdot 004 \sin 2 \zeta$ and $-0'' \cdot 090 \cos 2 \zeta$; and for the only Stars that can be sensibly affected by the omission, viz., the five Polar Stars, a Table of Corrections is given at pages 442 and 443.

The Table of Constants at pages 400 and 401 for facilitating the Reduction of Stars *generally*, has been computed from BESSEL's Formulæ, given at page 399, using the A, B, C, D, contained in this volume.

The apparent places of 95 of the principal Stars have been deduced from the Mean Places for January 1, 1856, using the Variables A, B, C, D, in the present Volume with constants computed for the year 1860, similar to those for 1850 in the Catalogue of the British Association.* For the five Polar Stars the constants have been computed for 1856 and 1857, and interpolated. The corrections were computed independently for every tenth day, with the exception of those for α and δ URSE MINORIS, which were interpolated, with second differences, from computations made for every third day of the year.

A further correction of the right ascension for *daily* aberration is necessary, where extreme accuracy is required, and may be computed as follows: Let ϕ denote the latitude of the place, and δ the declination of the Star, then the correction (*in time*) for the *upper* transit is,

$$+ 0^s \cdot 0206 \cos \phi \sec \delta$$

and for the *lower* transit,

$$- 0^s \cdot 0206 \cos \phi \sec \delta$$

The Lists of Moon-Culminating Stars, Occultations, and Opposition of Mars have been selected from the Catalogue of the British Association.

* The Catalogue of Stars of the British Association for the Advancement of Science; containing the Mean Right Ascensions and North Polar Distances of eight thousand three hundred and seventy-seven Fixed Stars, reduced to January 1, 1850: together with their annual precessions, secular variations, and proper motions, as well as the logarithmic constants for computing precession, aberration, and nutation. With a Preface explanatory of their Construction and Application. By the late Francis Baily, Esq. London, 1845. 4to.

The mean Places of the Stars for each List were taken in order of preference, 1. From the Catalogue of the 100 Stars in this Work. 2. From AIRY'S Greenwich Twelve-Year Catalogue of 2156* Stars. 3. From the Catalogue of the British Association. The reduction of the Mean to the Apparent Places has been performed by means of the Constants in the Catalogue of the British Association; the corrections for each star on the contiguous days being obtained by different computers for the Moon-Culminating List, and those for the Occultations and Opposition of Mars by duplicate computations.

The calculations of the Elements of Occultations, the Occultations visible at Greenwich, and the Solar and Lunar Eclipses, have been made in the manner described by Mr. WOOLHOUSE in the APPENDIX to the NAUTICAL ALMANAC for 1836: those relating to the Occultations, in duplicate.

The Tides at London Bridge for the year 1856 have been computed from tables in "An Elementary Treatise on the Tides. By J. W. LUBBOCK, Esq." (London, 1839.)

The Tables for finding the Latitude of a place by Observations of the Pole Star (α URSE MINORIS), at any hour of the day, are founded on the following formula:

$$l = a - p \cos h + \frac{1}{2} \sin 1'' (p \sin h)^2 \tan a$$

where l denotes the latitude

a — the true altitude of the Star

p — the apparent polar distance, expressed in seconds of arc

h — the hour angle of the Star = $S - a$; S being the sidereal time of observation, and a the right ascension of the Star.

Table I contains the value of the *second* term ($p \cos h$) or the *first correction*; assuming, as *mean* values, $p = 87' 30''$, and $a = 16^\circ 40'$.

Table II contains the value of the *third* term ($\frac{1}{2} \sin 1'' (p \sin h)^2 \tan a$) or the *second correction*, using the same *mean* quantities as in Table I.

Table III, which is *special* for the year 1856, and depends upon the difference between the true and assumed values of p and a , contains the *third* correction increased by $1'$ for the purpose of rendering the quantities additive.

A fourth term ($-\frac{1}{2} \sin^2 1'' (p \cos h) (p \sin h)^2$) is omitted, its greatest value being less than half a second.

In the construction of this Ephemeris generally, duplicate computations have been made where necessary, and independent calculations performed to guard against error in principle, and all results admitting of such test finally examined by means of differences.

W. S. STRATFORD,
Superintendent of the Nautical Almanac.

Nautical Almanac Office,
3, Verulam Buildings, Gray's Inn, London.
March 28, 1853.

* Catalogue of 2156 Stars, formed from the Observations made during twelve years, from 1836 to 1847, at the Royal Observatory, Greenwich. London. 1849. 4to.

PRINCIPAL ARTICLES OF THE CALENDAR,
For the Year 1856.

Golden Number - - - - 14	Dominical Letters - - - FE
Epact - - - - - 23	Roman Indiction - - - 14
Solar Cycle - - - - - 17	Julian Period - - - - 6569

FIXED AND MOVEABLE FESTIVALS, ANNIVERSARIES,
&c. &c.

Epiphany - - - - - Jan. 6	Pentecost—Whit Sunday - May 11
Septuagesima Sunday - - - - 20	Trinity Sunday - - - - - 18
Martyrdom of K. Charles I. - - - 30	Corpus Christi - - - - - 22
Quinquagesima—Shrove Sunday Feb. 3	Birth of Q. Victoria - - - - - 24
Ash Wednesday - - - - - 6	Restoration of K. Charles II. - - 29
Quadragesima—1st Sun. in Lent - 10	Accession of Q. Victoria - - June 20
St. David - - - - - Mar. 1	Proclamation - - - - - 21
Palm Sunday - - - - - 16	St. John Bapt.—Midsum. Day - - 24
St. Patrick - - - - - 17	Birth of Prince Albert - - Aug. 26
Good Friday - - - - - 21	St. Michael—Michaelmas Day Sept. 29
EASTER SUNDAY - - - - - 23	Gunpowder Plot - - - - - Nov. 5
Annunciation—Lady Day - - - 25	Birth of Prince of Wales - - - - 9
Low Sunday - - - - - 30	St. Andrew - - - - - 30
St. George - - - - - April 23	1st Sunday in Advent - - - - - 30
Rogation Sunday - - - - - 27	St. Thomas - - - - - Dec. 21
Ascension Day—Holy Thursday May 1	Christmas Day - - - - - 25

The Year 5617 of the Jewish Era commences on September 30, 1856.
Ramadân (Month of Abstinence observed by the Turks) commences on
May 6, 1856.

The Year 1273 of the Mohammedan Era commences on Sept. 1, 1856.

EXPLANATION OF ASTRONOMICAL SYMBOLS AND ABBREVIATIONS.

<p>☉ The Sun. ☾ The Moon. ☿ Mercury. ♀ Venus. ♁ or ♂ The Earth. ♂ Mars. ♁ Ceres. ♃ Pallas. ♄ Juno. ♁ Vesta. ♁ Astræa. ♁ Hebe. ♁ Iris. ♁ Flora. ♁ Metis. ♁ Hygeia. ♁ Parthenope. ♁ Victoria. ♁ Egeria.</p>	<p>♁ Irene. ♁ Eunomia. ♁ Psyche. ♁ Thetis. ♁ Melpomene. ♁ Fortuna. ♁ Massilia. ♃ Jupiter. ♄ Saturn. ♁ Uranus. ♁ Neptune. ♁ Conjunction. ☐ Quadrature. ♁ Opposition. ♁ Ascending Node. ♁ Descending Node. N. North. S. South. E. East. W. West. ° Degrees.</p>	<p>' Minutes of Arc. " Seconds of Arc. h Hours. m Minutes of Time. s Seconds of Time.</p> <p>♈ Arics - - 0 ♉ Taurus- - 30 ♊ Gemini - - 60 ♋ Cancer- - 90 ♌ Leo- - - 120 ♍ Virgo - - 150 ♎ Libra - - 180 ♏ Scorpio - 210 ♐ Sagittarius 240 ♑ Capricornus 270 ♒ Aquarius - 300 ♓ Pisces - - 330</p>
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LAW TERMS, 1856.

As settled by Statutes

11 GEO. IV. and 1 WILL. IV. cap. 70, s. 6. (Passed July 23, 1830.)

1 WILL. IV. - - - - - cap. 3, s. 2. (Passed Dec. 23, 1830.)

HILARY TERM - - - - *Begins* Jan. 11 - - *Ends* Jan. 31

EASTER - - - - - Apr. 15 - - - - May 8

TRINITY - - - - - May 22 - - - - June 12

MICHAELMAS - - - - - Nov. 2 - - - - Nov. 25

For Returns see Statute 1 WILL. IV. cap. 3, s. 2. (Passed Dec. 23, 1830.)

UNIVERSITY TERMS, 1856.

Terms.	OXFORD.		CAMBRIDGE.		
	<i>Begins.</i>	<i>Ends.</i>	<i>Begins.</i>	<i>Divides.</i>	<i>Ends.</i>
Lent - - - -	Jan. 14	Mar. 15	Jan. 13	Feb. 12, Midnight.	Mar. 14
Easter - - - -	April 2	May 10	April 2	May 18, Midnight.	July 4
Trinity - - - -	May 14	July 5	- - -	- - - - -	- - -
Michaelmas -	Oct. 10	Dec. 17	Oct. 10	Nov. 12, Midnight.	Dec. 16
	<i>The Act, July 1.</i>		<i>The Commencement, July 1.</i>		

E P H E M E R I S
FOR THE YEAR
1856,
FOR THE MERIDIAN
OF THE
ROYAL OBSERVATORY AT GREENWICH.

JANUARY, 1856.

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sideral Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Tues.	1	h m s 18 44 56.85	s 11.045	S. 23 3 28.1	" 12.44	m s 1 11.10	m s 3 36.04	s 1.185
Wed.	2	18 49 21.93	11.031	22 58 29.5	13.58	1 11.05	4 4.48	1.171
Thur.	3	18 53 46.67	11.016	22 53 3.5	14.73	1 11.00	4 32.59	1.156
Frid.	4	18 58 11.06	11.000	22 47 10.1	15.87	1 10.95	5 0.34	1.140
Sat.	5	19 2 35.06	10.982	22 40 49.5	16.99	1 10.89	5 27.70	1.123
Sun.	6	19 6 58.63	10.963	22 34 1.8	18.10	1 10.83	5 54.64	1.104
Mon.	7	19 11 21.75	10.943	22 26 47.4	19.21	1 10.77	6 21.13	1.083
Tues.	8	19 15 44.38	10.921	22 19 6.3	20.31	1 10.70	6 47.13	1.062
Wed.	9	19 20 6.48	10.898	22 10 58.9	21.40	1 10.63	7 12.61	1.039
Thur.	10	19 24 28.04	10.874	22 2 25.3	22.48	1 10.55	7 37.55	1.015
Frid.	11	19 28 49.03	10.849	21 53 26.0	23.54	1 10.48	8 1.91	0.990
Sat.	12	19 33 9.41	10.823	21 44 1.0	24.59	1 10.40	8 25.66	0.964
Sun.	13	19 37 29.16	10.796	21 34 10.7	25.63	1 10.31	8 48.79	0.937
Mon.	14	19 41 48.26	10.768	21 23 55.5	26.66	1 10.22	9 11.27	0.909
Tues.	15	19 46 6.68	10.739	21 13 15.5	27.68	1 10.13	9 33.07	0.880
Wed.	16	19 50 24.42	10.709	21 2 11.2	28.68	1 10.04	9 54.19	0.850
Thur.	17	19 54 41.45	10.679	20 50 42.9	29.67	1 9.95	10 14.61	0.820
Frid.	18	19 58 57.74	10.648	20 38 50.8	30.64	1 9.85	10 34.30	0.789
Sat.	19	20 3 13.30	10.617	20 26 35.4	31.60	1 9.75	10 53.25	0.758
Sun.	20	20 7 28.11	10.586	20 13 56.9	32.55	1 9.65	11 11.45	0.727
Mon.	21	20 11 42.16	10.554	20 0 55.7	33.48	1 9.55	11 28.89	0.695
Tues.	22	20 15 55.45	10.522	19 47 32.1	34.40	1 9.44	11 45.58	0.663
Wed.	23	20 20 7.96	10.489	19 33 46.5	35.30	1 9.33	12 1.48	0.630
Thur.	24	20 24 19.69	10.456	19 19 39.2	36.19	1 9.22	12 16.61	0.598
Frid.	25	20 28 30.64	10.423	19 5 10.7	37.07	1 9.11	12 30.96	0.565
Sat.	26	20 32 40.79	10.390	18 50 21.1	37.92	1 9.00	12 44.53	0.532
Sun.	27	20 36 50.16	10.357	18 35 11.0	38.76	1 8.89	12 57.30	0.499
Mon.	28	20 40 58.72	10.324	18 19 40.7	39.59	1 8.78	13 9.27	0.466
Tues.	29	20 45 6.49	10.290	18 3 50.4	40.40	1 8.66	13 20.46	0.433
Wed.	30	20 49 13.46	10.257	17 47 40.7	41.20	1 8.55	13 30.84	0.400
Thur.	31	20 53 19.63	10.223	17 31 11.9	41.98	1 8.43	13 40.42	0.366
Frid.	32	20 57 24.99		S. 17 14 24.3		1 8.32	13 49.21	

* Mean Time of the Semidiameter passing may be found by subtracting 0'.19 from the Sideral Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
		h m s	° ' "	' "	m s	h m s
Tues.	1	18 44 56.19	S. 23 3 28.8	16 18.2	3 35.97	18 41 20.22
Wed.	2	18 49 21.18	22 58 30.5	16 18.2	4 4.40	18 45 16.78
Thur.	3	18 53 45.84	22 53 4.6	16 18.2	4 32.50	18 49 13.34
Frid.	4	18 58 10.14	22 47 11.4	16 18.2	5 0.24	18 53 9.90
Sat.	5	19 2 34.06	22 40 51.0	16 18.2	5 27.60	18 57 6.46
Sun.	6	19 6 57.55	22 34 3.6	16 18.1	5 54.53	19 1 3.02
Mon.	7	19 11 20.59	22 26 49.4	16 18.1	6 21.02	19 4 59.57
Tues.	8	19 15 43.14	22 19 8.6	16 18.1	6 47.01	19 8 56.13
Wed.	9	19 20 5.18	22 11 1.5	16 18.1	7 12.49	19 12 52.69
Thur.	10	19 24 26.67	22 2 28.2	16 18.0	7 37.42	19 16 49.25
Frid.	11	19 28 47.58	21 53 29.1	16 18.0	8 1.77	19 20 45.81
Sat.	12	19 33 7.89	21 44 4.4	16 17.9	8 25.52	19 24 42.37
Sun.	13	19 37 27.57	21 34 14.5	16 17.9	8 48.65	19 28 38.92
Mon.	14	19 41 46.61	21 23 59.5	16 17.8	9 11.13	19 32 35.48
Tues.	15	19 46 4.97	21 13 19.9	16 17.7	9 32.93	19 36 32.04
Wed.	16	19 50 22.65	21 2 15.9	16 17.6	9 54.05	19 40 28.60
Thur.	17	19 54 39.63	20 50 47.9	16 17.6	10 14.47	19 44 25.16
Frid.	18	19 58 55.87	20 38 56.2	16 17.5	10 34.16	19 48 21.71
Sat.	19	20 3 11.38	20 26 41.1	16 17.5	10 53.11	19 52 18.27
Sun.	20	20 7 26.14	20 14 2.9	16 17.4	11 11.31	19 56 14.83
Mon.	21	20 11 40.15	20 1 2.1	16 17.3	11 28.76	20 0 11.39
Tues.	22	20 15 53.39	19 47 38.8	16 17.2	11 45.45	20 4 7.94
Wed.	23	20 20 5.86	19 33 53.6	16 17.1	12 1.36	20 8 4.50
Thur.	24	20 24 17.55	19 19 46.6	16 17.0	12 16.49	20 12 1.06
Frid.	25	20 28 28.46	19 5 18.4	16 16.8	12 30.84	20 15 57.62
Sat.	26	20 32 38.59	18 50 29.2	16 16.7	12 44.42	20
Sun.	27	20 36 47.92	18 35 19.4	16 16.6	12 57.19	21
Mon.	28	20 40 56.46	18 19 49.3	16 16.5	13 9.17	
Tues.	29	20 45 4.20	18 3 59.4	16 16.3	13 20.2	
Wed.	30	20 49 11.15	17 47 50.0	16 16.2	13 30.	
Thur.	31	20 53 17.30	17 31 21.4	16 16.0	13 40.	
Frid.	32	20 57 22.64	S. 17 14 34.2	16 15.9	13 4	

* The Semidiameter for Apparent Noon may be assumed the same as

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.		Noon.	Midnight.	Noon.	Midnight.
1	280 19 34.8	N.0.10	9.9926550	14 57.8	15 2.2	54 54.7	55 10.9
2	281 20 45.3	S.0.04	9.9926581	15 7.2	15 12.8	55 29.3	55 49.8
3	282 21 56.0	0.18	9.9926633	15 18.9	15 25.3	56 12.0	56 35.6
4	283 23 6.9	0.30	9.9926704	15 32.0	15 38.9	57 0.2	57 25.4
5	284 24 17.8	0.41	9.9926793	15 45.7	15 52.4	57 50.6	58 15.3
6	285 25 28.7	0.49	9.9926898	15 58.9	16 4.9	58 38.9	59 0.9
7	286 26 39.5	0.54	9.9927019	16 10.3	16 15.0	59 20.8	59 38.1
8	287 27 50.1	0.57	9.9927158	16 18.9	16 22.0	59 52.5	60 3.5
9	288 29 0.4	0.57	9.9927314	16 24.0	16 25.1	60 11.0	60 15.0
10	289 30 10.3	0.54	9.9927487	16 25.2	16 24.5	60 15.5	60 12.7
11	290 31 19.7	0.48	9.9927678	16 22.9	16 20.5	60 6.8	59 58.2
12	291 32 28.5	0.39	9.9927885	16 17.5	16 14.0	59 47.3	59 34.5
13	292 33 36.6	0.28	9.9928112	16 10.1	16 5.9	59 20.2	59 4.7
14	293 34 44.1	0.16	9.9928359	16 1.5	15 57.0	58 48.5	58 31.8
15	294 35 50.8	S.0.03	9.9928628	15 52.3	15 47.7	58 14.8	57 57.9
16	295 36 56.7	N.0.10	9.9928919	15 43.2	15 38.7	57 41.2	57 24.7
17	296 38 1.8	0.22	9.9929234	15 34.3	15 30.0	57 8.5	56 52.7
18	297 39 6.0	0.33	9.9929575	15 25.8	15 21.7	56 37.3	56 22.5
19	298 40 9.3	0.42	9.9929941	15 17.8	15 13.9	56 8.0	55 53.9
20	299 41 11.8	0.49	9.9930333	15 10.2	15 6.6	55 40.3	55 27.1
21	300 42 13.4	0.52	9.9930752	15 3.2	15 0.0	55 14.6	55 2.7
22	301 43 14.3	0.53	9.9931198	14 56.9	14 54.1	54 51.5	54 41.2
23	302 44 14.4	0.51	9.9931670	14 51.6	14 49.3	54 31.8	54 23.5
24	303 45 13.8	0.46	9.9932171	14 47.4	14 45.8	54 16.4	54 10.8
25	304 46 12.4	0.38	9.9932697	14 44.6	14 44.1	54 6.8	54 4.5
26	305 47 10.3	0.28	9.9933249	14 44.0	14 44.5	54 4.1	54 5.8
27	306 48 7.6	0.16	9.9933824	14 45.5	14 47.2	54 9.6	54 15.7
28	307 49 4.1	N.0.02	9.9934422	14 49.5	14 52.5	54 24.2	54 35.2
29	308 49 59.9	S.0.12	9.9935042	14 56.2	15 0.5	54 48.7	55 4.6
30	309 50 55.1	0.25	9.9935682	15 5.5	15 11.2	55 23.0	55 43.7
31	310 51 49.6	0.37	9.9936341	15 17.4	15 24.1	56 6.6	56 31.4
32	311 52 43.2	S.0.48	9.9937018	15 31.3	15 38.9	56 57.8	57 25.4

		MEAN TIME.														
Day of the Week.	Day of the Month.	THE MOON'S														
		Longitude.				Latitude.				Age.		Meridian Passage.				
		Noon.		Midnight.		Noon.		Midnight.		Noon.						
		o	'	"	o	'	"	N. o	'	"	N. o	'	"	d	h	m
Tues.	1	201	16	0'9	207	20	19'3	N. 0	51	44'1	N. 0	19	38'4	23'1	19	11'0
Wed.	2	213	28	38'4	219	41	36'3	S. 0	13	0'8	S. 0	45	54'1	24'1	19	55'6
Thur.	3	225	59	47'4	232	23	42'3	1	18	39'3	1	50	52'4	25'1	20	44'5
Frid.	4	238	53	45'1	245	30	14'0	2	22	7'9	2	51	57'5	26'1	21	38'5
Sat.	5	252	13	18'2	259	2	57'7	3	19	51'9	3	45	20'1	27'1	22	37'5
Sun.	6	265	59	2'7	273	1	12'2	4	7	51'3	4	26	55'7	28'1	23	39'9
Mon.	7	280	8	54'4	287	21	28'2	4	42	5'3	4	52	55'9	29'1		
Tues.	8	294	38	3'1	301	57	41'8	4	59	7'5	5	0	27'2	0'5	0	43'0
Wed.	9	309	19	23'3	316	42	4'6	4	56	48'4	4	48	12'1	1'5	1	44'0
Thur.	10	324	4	43'8	331	26	23'3	4	34	46'8	4	16	48'4	2'5	2	41'1
Frid.	11	338	46	11'9	346	3	25'6	3	54	38'8	3	28	45'3	3'5	3	34'2
Sat.	12	353	17	29'7	0	27	58'5	2	59	39'7	2	27	55'2	4'5	4	24'1
Sun.	13	7	34	34'6	14	37	9'2	1	54	7'5	1	18	52'6	5'5	5	12'2
Mon.	14	21	35	39'8	28	30	8'6	S. 0	42	45'9	S. 0	6	21'9	6'5	5	59'9
Tues.	15	35	20	43'5	42	7	33'9	N. 0	29	47'1	N. 1	5	9'8	7'5	6	48'5
Wed.	16	48	50	51'0	55	30	46'4	1	39	18'3	2	11	45'9	8'5	7	38'9
Thur.	17	62	7	31'5	68	41	16'4	2	42	9'3	3	10	7'1	9'5	8	31'7
Frid.	18	75	12	9'6	81	40	17'8	3	35	21'2	3	57	35'5	10'5	9	26'6
Sat.	19	88	5	45'8	94	28	36'6	4	16	37'3	4	32	16'0	11'5	10	22'3
Sun.	20	100	48	51'4	107	6	30'7	4	44	24'8	4	52	59'0	12'5	11	17'2
Mon.	21	113	21	34'4	119	34	2'4	4	57	57'0	4	59	19'4	13'5	12	9'7
Tues.	22	125	43	55'7	131	51	16'3	4	57	9'5	4	51	33'8	14'5	12	58'9
Wed.	23	137	56	8'9	143	58	40'1	4	42	39'5	4	30	36'3	15'5	13	44'5
Thur.	24	149	59	0'0	155	57	21'5	4	15	34'6	3	57	47'5	16'5	14	27'1
Frid.	25	161	54	0'9	167	49	18'6	3	37	27'8	3	14	20'1	17'5	15	7'4
Sat.	26	173	43	38'1	179	37	26'2	2	50	6'0	2	23			15	46'5
Sun.	27	185	31	13'2	191	25	32'2	1	55	26'1	1	2			6	25'5
Mon.	28	197	20	59'2	203	18	12'1	N. 0	55	30'0	N. 0					
Tues.	29	209	17	51'0	215	20	36'9	S. 0	7	33'3	S. 0					
Wed.	30	221	27	11'5	227	38	16'5	1	11	24'0						
Thur.	31	233	54	31'6	240	16	34'2	2	13	25'4						
Frid.	32	246	44	58'7	253	20	13'3	S. 3	10	37'1						

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>TUESDAY 1.</i>				<i>THURSDAY 3.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	13 19 53.98	S. 7 30 11.1	137.45	0	14 52 30.72	S. 17 53 41.8	117.86
1	13 21 43.11	7 43 55.8	137.28	1	14 54 35.27	18 5 29.0	117.16
2	13 23 32.44	7 57 39.5	137.09	2	14 56 40.26	18 17 11.9	116.46
3	13 25 21.98	8 11 22.0	136.89	3	14 58 45.68	18 28 50.6	115.73
4	13 27 11.75	8 25 3.4	136.69	4	15 0 51.54	18 40 25.0	115.00
5	13 29 1.73	8 38 43.5	136.47	5	15 2 57.84	18 51 55.0	114.25
6	13 30 51.94	8 52 22.3	136.25	6	15 5 4.59	19 3 20.5	113.48
7	13 32 42.38	9 5 59.8	136.02	7	15 7 11.79	19 14 41.4	112.70
8	13 34 33.06	9 19 36.0	135.79	8	15 9 19.44	19 25 57.6	111.91
9	13 36 23.98	9 33 10.7	135.54	9	15 11 27.55	19 37 9.0	111.10
10	13 38 15.14	9 46 43.9	135.28	10	15 13 36.11	19 48 15.6	110.27
11	13 40 6.56	10 0 15.6	135.02	11	15 15 45.14	19 59 17.3	109.43
12	13 41 58.24	10 13 45.7	134.74	12	15 17 54.64	20 10 13.9	108.59
13	13 43 50.18	10 27 14.1	134.46	13	15 20 4.60	20 21 5.4	107.72
14	13 45 42.38	10 40 40.9	134.16	14	15 22 15.03	20 31 51.7	106.83
15	13 47 34.85	10 54 5.9	133.86	15	15 24 25.93	20 42 32.7	105.93
16	13 49 27.60	11 7 29.0	133.55	16	15 26 37.31	20 53 8.3	105.01
17	13 51 20.64	11 20 50.3	133.23	17	15 28 49.16	21 3 38.3	104.08
18	13 53 13.96	11 34 9.7	132.90	18	15 31 1.50	21 14 2.8	103.13
19	13 55 7.57	11 47 27.1	132.56	19	15 33 14.32	21 24 21.6	102.17
20	13 57 1.48	12 0 42.5	132.21	20	15 35 27.62	21 34 34.6	101.19
21	13 58 55.69	12 13 55.7	131.85	21	15 37 41.41	21 44 41.7	100.19
22	14 0 50.20	12 27 6.8	131.48	22	15 39 55.69	21 54 42.9	99.18
23	14 2 45.03	S. 12 40 15.7	131.10	23	15 42 10.45	S. 22 4 38.0	98.15
<i>WEDNESDAY 2.</i>				<i>FRIDAY 4.</i>			
0	14 4 40.17	S. 12 53 22.3	130.71	0	15 44 25.71	S. 22 14 26.9	97.11
1	14 6 35.63	13 6 26.6	130.31	1	15 46 41.46	22 24 9.5	96.04
2	14 8 31.42	13 19 28.4	129.90	2	15 48 57.70	22 33 45.8	94.96
3	14 10 27.54	13 32 27.8	129.48	3	15 51 14.44	22 43 15.6	93.87
4	14 12 24.00	13 45 24.7	129.04	4	15 53 31.67	22 52 38.8	92.75
5	14 14 20.80	13 58 18.9	128.60	5	15 55 49.39	23 1 55.3	91.63
6	14 16 17.94	14 11 10.5	128.14	6	15 58 7.62	23 11 5.0	90.48
7	14 18 15.43	14 23 59.3	127.67	7	16 0 26.34	23 20 7.9	89.32
8	14 20 13.28	14 36 45.4	127.19	8	16 2 45.55	23 29 3.8	88.14
9	14 22 11.48	14 49 28.6	126.70	9	16 5 5.26	23 37 52.6	86.94
10	14 24 10.05	15 2 8.8	126.20	10	16 7 25.46	23 46 34.2	85.73
11	14 26 8.99	15 14 46.0	125.68	11	16 9 46.16	23 55 8.6	84.49
12	14 28 8.30	15 27 20.1	125.16	12	16 12 7.35	24 3 35.6	83.25
13	14 30 7.99	15 39 51.1	124.62	13	16 14 29.04	24 11 55.1	81.98
14	14 32 8.06	15 52 18.8	124.07	14	16 16 51.21	24 20 7.0	80.70
15	14 34 8.52	16 4 43.2	123.51	15	16 19 13.88	24 28 11.2	79.40
16	14 36 9.37	16 17 4.3	122.93	16	16 21 37.04	24 36 7.6	78.08
17	14 38 10.61	16 29 21.9	122.34	17	16 24 0.68	24 43 56.1	76.75
18	14 40 12.25	16 41 35.9	121.74	18	16 26 24.81	24 51 36.6	75.40
19	14 42 14.30	16 53 46.4	121.13	19	16 28 49.43	24 59 9.0	74.03
20	14 44 16.75	17 5 53.2	120.50	20	16 31 14.52	25 6 33.2	72.65
21	14 46 19.61	17 17 56.2	119.86	21	16 33 40.09	25 13 49.1	71.25
22	14 48 22.89	17 29 55.3	119.21	22	16 36 6.14	25 20 56.6	69.83
23	14 50 26.60	17 41 50.5	118.54	23	16 38 32.66	25 27 55.5	68.39
24	14 52 30.72	S. 17 53 41.8		24	16 40 59.65	S. 25 34 45.9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>SATURDAY 5.</i>				<i>MONDAY 7.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	16 40 59.65	S. 25 34 45.9	66.94	0	18 45 47.04	S. 27 45 32.4	18.46
1	16 43 27.11	25 41 27.6	65.47	1	18 48 28.48	27 43 41.6	20.43
2	16 45 55.02	25 48 0.4	63.99	2	18 51 9.96	27 41 39.0	22.41
3	16 48 23.40	25 54 24.3	62.48	3	18 53 51.47	27 39 24.6	24.38
4	16 50 52.23	26 0 39.2	60.97	4	18 56 33.01	27 36 58.3	26.36
5	16 53 21.51	26 6 45.0	59.43	5	18 59 14.56	27 34 20.1	28.33
6	16 55 51.23	26 12 41.6	57.88	6	19 1 56.11	27 31 30.1	30.30
7	16 58 21.40	26 18 28.9	56.31	7	19 4 37.65	27 28 28.3	32.27
8	17 0 52.00	26 24 6.8	54.73	8	19 7 19.16	27 25 14.7	34.24
9	17 3 23.03	26 29 35.2	53.14	9	19 10 0.64	27 21 49.2	36.21
10	17 5 54.48	26 34 54.0	51.52	10	19 12 42.07	27 18 12.0	38.17
11	17 8 26.35	26 40 3.1	49.90	11	19 15 23.45	27 14 22.9	40.13
12	17 10 58.64	26 45 2.5	48.25	12	19 18 4.76	27 10 22.1	42.10
13	17 13 31.33	26 49 52.0	46.59	13	19 20 45.99	27 6 9.5	44.05
14	17 16 4.42	26 54 31.6	44.92	14	19 23 27.13	27 1 45.2	45.99
15	17 18 37.91	26 59 1.1	43.23	15	19 26 8.17	26 57 9.3	47.93
16	17 21 11.78	27 3 20.5	41.53	16	19 28 49.09	26 52 21.7	49.87
17	17 23 46.03	27 7 29.6	39.81	17	19 31 29.89	26 47 22.5	51.80
18	17 26 20.65	27 11 28.5	38.08	18	19 34 10.56	26 42 11.7	53.72
19	17 28 55.63	27 15 17.0	36.34	19	19 36 51.08	26 36 49.3	55.63
20	17 31 30.97	27 18 55.1	34.59	20	19 39 31.45	26 31 15.5	57.54
21	17 34 6.66	27 22 22.6	32.82	21	19 42 11.66	26 25 30.3	59.44
22	17 36 42.68	27 25 39.5	31.04	22	19 44 51.70	26 19 33.7	61.33
23	17 39 19.04	S. 27 28 45.7	29.24	23	19 47 31.55	S. 26 13 23.7	63.21
<i>SUNDAY 6.</i>				<i>TUESDAY 8.</i>			
0	17 41 55.72	S. 27 31 41.2	27.44	0	19 50 11.21	S. 26 7 6.5	65.08
1	17 44 32.72	27 34 25.8	25.62	1	19 52 50.67	26 0 36.0	66.94
2	17 47 10.02	27 36 59.6	23.80	2	19 55 29.91	25 53 54.4	68.79
3	17 49 47.61	27 39 22.4	21.96	3	19 58 8.94	25 47 1.7	70.62
4	17 52 25.49	27 41 34.1	20.11	4	20 0 47.74	25 39 58.0	72.45
5	17 55 3.64	27 43 34.7	18.25	5	20 3 26.30	25 32 43.3	74.27
6	17 57 42.06	27 45 24.2	16.38	6	20 6 4.62	25 25 17.7	76.07
7	18 0 20.73	27 47 2.5	14.50	7	20 8 42.68	25 17 41.2	77.86
8	18 2 59.65	27 48 29.5	12.61	8	20 11 20.48	25 9 54.0	79.64
9	18 5 38.80	27 49 45.2	10.72	9	20 13 58.02	25 1 56.2	81.41
10	18 8 18.18	27 50 49.5	8.81	10	20 16 35.28	24 53 47.7	83.16
11	18 10 57.77	27 51 42.4	6.90	11	20 19 12.25	24 45 28.7	84.90
12	18 13 37.57	27 52 23.8	4.98	12	20 21 48.93	24 36 59.3	86.63
13	18 16 17.56	27 52 53.7	3.05	13	20 24 25.32	24 28 10.5	88.34
14	18 18 57.74	27 53 12.0	1.12	14	20 27 1.40		90.03
15	18 21 38.09	27 53 18.7	0.82	15	20 29 37.17		91.71
16	18 24 18.59	27 53 13.8	2.76	16	20 32 12.63		93.38
17	18 26 59.24	27 52 57.2	4.71	17	20 34 58.14		
18	18 29 40.03	27 52 29.0	6.67	18	20 37 43.21		
19	18 32 20.95	27 51 49.0	8.62	19	20 40 28.24		
20	18 35 1.99	27 50 57.2	10.58	20	20 43 13.24		
21	18 37 43.13	27 49 53.7	12.55	21	20 45 58.24		
22	18 40 24.35	27 48 38.4	14.52	22	20 48 43.24		
23	18 43 5.66	27 47 11.3	16.49	23	20 51 28.24		
24	18 45 47.04	S. 27 45 32.4		24	20 54 13.24		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>WEDNESDAY 9.</i>				<i>FRIDAY 11.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	20 52 44.29	S. 22 42 5.0	106.12	0	22 47 32.07	S. 11 54 39.4	157.19
1	20 55 16.68	22 31 28.3	107.63	1	22 49 46.74	11 38 56.2	157.78
2	20 57 48.70	22 20 42.5	109.13	2	22 52 1.10	11 23 9.5	158.35
3	21 0 20.35	22 9 47.7	110.61	3	22 54 15.15	11 7 19.4	158.90
4	21 2 51.64	21 58 44.0	112.07	4	22 56 28.89	10 51 26.1	159.43
5	21 5 22.55	21 47 31.6	113.52	5	22 58 42.34	10 35 29.5	159.94
6	21 7 53.09	21 36 10.5	114.94	6	23 0 55.50	10 19 29.8	160.44
7	21 10 23.25	21 24 40.8	116.35	7	23 3 8.36	10 3 27.2	160.91
8	21 12 53.04	21 13 2.7	117.74	8	23 5 20.94	9 47 21.7	161.37
9	21 15 22.44	21 1 16.3	119.11	9	23 7 33.25	9 31 13.5	161.81
10	21 17 51.46	20 49 21.7	120.46	10	23 9 45.27	9 15 2.6	162.23
11	21 20 20.09	20 37 18.9	121.79	11	23 11 57.03	8 58 49.2	162.64
12	21 22 48.34	20 25 8.2	123.10	12	23 14 8.52	8 42 33.4	163.02
13	21 25 16.20	20 12 49.6	124.39	13	23 16 19.75	8 26 15.3	163.39
14	21 27 43.67	20 0 23.2	125.66	14	23 18 30.73	8 9 55.0	163.74
15	21 30 10.75	19 47 49.2	126.92	15	23 20 41.46	7 53 32.5	164.07
16	21 32 37.44	19 35 7.7	128.15	16	23 22 51.95	7 37 8.0	164.39
17	21 35 3.74	19 22 18.8	129.37	17	23 25 2.19	7 20 41.7	164.69
18	21 37 29.65	19 9 22.6	130.56	18	23 27 12.20	7 4 13.6	164.97
19	21 39 55.17	18 56 19.3	131.74	19	23 29 21.98	6 47 43.7	165.24
20	21 42 20.30	18 43 8.9	132.89	20	23 31 31.54	6 31 12.2	165.49
21	21 44 45.04	18 29 51.5	134.03	21	23 33 40.88	6 14 39.3	165.72
22	21 47 9.39	18 16 27.3	135.14	22	23 35 50.00	5 58 5.0	165.92
23	21 49 33.36	S. 18 2 56.5	136.24	23	23 37 58.91	S. 5 41 29.4	166.13
<i>THURSDAY 10.</i>				<i>SATURDAY 12.</i>			
0	21 51 56.93	S. 17 49 19.1	137.31	0	23 40 7.62	S. 5 24 52.6	166.32
1	21 54 20.12	17 35 35.2	138.36	1	23 42 16.13	5 8 14.7	166.48
2	21 56 42.93	17 21 45.0	139.40	2	23 44 24.46	4 51 35.8	166.63
3	21 59 5.35	17 7 48.7	140.41	3	23 46 32.59	4 34 56.0	166.77
4	22 1 27.39	16 53 46.2	141.41	4	23 48 40.54	4 18 15.4	166.89
5	22 3 49.06	16 39 37.7	142.39	5	23 50 48.32	4 1 34.1	166.99
6	22 6 10.34	16 25 23.4	143.34	6	23 52 55.93	3 44 52.2	167.07
7	22 8 31.25	16 11 3.4	144.28	7	23 55 3.37	3 28 9.7	167.14
8	22 10 51.79	15 56 37.7	145.19	8	23 57 10.65	3 11 26.8	167.20
9	22 13 11.96	15 42 6.5	146.09	9	23 59 17.78	2 54 43.7	167.24
10	22 15 31.76	15 27 30.0	146.97	10	0 1 24.76	2 38 0.3	167.26
11	22 17 51.20	15 12 48.2	147.83	11	0 3 31.59	2 21 16.7	167.27
12	22 20 10.27	14 58 1.2	148.66	12	0 5 38.29	2 4 33.1	167.26
13	22 22 28.98	14 43 9.2	149.48	13	0 7 44.85	1 47 49.6	167.24
14	22 24 47.34	14 28 12.3	150.28	14	0 9 51.29	1 31 6.2	167.20
15	22 27 5.35	14 13 10.7	151.06	15	0 11 57.61	1 14 23.0	167.14
16	22 29 23.00	13 58 4.4	151.82	16	0 14 3.82	0 57 40.1	167.08
17	22 31 40.31	13 42 53.5	152.56	17	0 16 9.91	0 40 57.6	166.99
18	22 33 57.27	13 27 38.1	153.27	18	0 18 15.90	0 24 15.7	166.90
19	22 36 13.90	13 12 18.4	153.98	19	0 20 21.79	S. 0 7 34.3	166.79
20	22 38 30.19	12 56 54.6	154.66	20	0 22 27.58	N. 0 9 6.4	166.66
21	22 40 46.15	12 41 26.6	155.32	21	0 24 33.29	0 25 46.4	166.52
22	22 43 1.78	12 25 54.7	155.97	22	0 26 38.92	0 42 25.5	166.36
23	22 45 17.08	12 10 18.9	156.59	23	0 28 44.47	0 59 3.7	166.19
24	22 47 32.07	S. 11 54 39.4		24	0 30 49.95	N. 1 15 40.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SUNDAY 13.</i>				<i>TUESDAY 15.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	0 30 49.95	N. 1 15 40.8	166.01	0	2 11 30.62	N. 13 46 59.6	141.62
1	0 32 55.36	1 32 16.8	165.81	1	2 13 38.77	14 1 9.3	140.80
2	0 35 0.71	1 48 51.7	165.60	2	2 15 47.09	14 15 14.1	139.98
3	0 37 6.01	2 5 25.3	165.37	3	2 17 55.58	14 29 14.0	139.14
4	0 39 11.26	2 21 57.5	165.13	4	2 20 4.23	14 43 8.8	138.29
5	0 41 16.47	2 38 28.3	164.88	5	2 22 13.06	14 56 58.6	137.43
6	0 43 21.63	2 54 57.6	164.61	6	2 24 22.07	15 10 43.2	136.56
7	0 45 26.76	3 11 25.3	164.33	7	2 26 31.25	15 24 22.5	135.67
8	0 47 31.87	3 27 51.2	164.03	8	2 28 40.62	15 37 56.5	134.78
9	0 49 36.95	3 44 15.4	163.72	9	2 30 50.17	15 51 25.2	133.87
10	0 51 42.02	4 0 37.8	163.40	10	2 32 59.92	16 4 48.4	132.95
11	0 53 47.07	4 16 58.2	163.07	11	2 35 9.85	16 18 6.1	132.02
12	0 55 52.11	4 33 16.6	162.72	12	2 37 19.98	16 31 18.2	131.08
13	0 57 57.15	4 49 32.9	162.35	13	2 39 30.31	16 44 24.7	130.13
14	1 0 2.20	5 5 47.0	161.98	14	2 41 40.83	16 57 25.4	129.16
15	1 2 7.26	5 21 58.9	161.58	15	2 43 51.55	17 10 20.4	128.18
16	1 4 12.33	5 38 8.5	161.19	16	2 46 2.48	17 23 9.5	127.20
17	1 6 17.42	5 54 15.6	160.77	17	2 48 13.61	17 35 52.7	126.20
18	1 8 22.53	6 10 20.2	160.34	18	2 50 24.95	17 48 29.9	125.18
19	1 10 27.67	6 26 22.2	159.90	19	2 52 36.50	18 1 1.0	124.16
20	1 12 32.85	6 42 21.6	159.44	20	2 54 48.26	18 13 26.0	123.13
21	1 14 38.06	6 58 18.3	158.97	21	2 57 0.24	18 25 44.7	122.08
22	1 16 43.32	7 14 12.1	158.49	22	2 59 12.43	18 37 57.2	121.03
23	1 18 48.62	N. 7 30 3.1	158.00	23	3 1 24.83	N. 18 50 3.4	119.96
<i>MONDAY 14.</i>				<i>WEDNESDAY 16.</i>			
0	1 20 53.98	N. 7 45 51.1	157.49	0	3 3 37.46	N. 19 2 3.2	118.88
1	1 22 59.40	8 1 36.1	156.97	1	3 5 50.30	19 13 56.5	117.79
2	1 25 4.88	8 17 17.9	156.44	2	3 8 3.37	19 25 43.3	116.69
3	1 27 10.43	8 32 56.5	155.90	3	3 10 16.66	19 37 23.4	115.58
4	1 29 16.05	8 48 31.9	155.34	4	3 12 30.17	19 48 56.9	114.46
5	1 31 21.74	9 4 3.9	154.77	5	3 14 43.90	20 0 23.7	113.33
6	1 33 27.52	9 19 32.5	154.19	6	3 16 57.86	20 11 43.6	112.18
7	1 35 33.39	9 34 57.7	153.59	7	3 19 12.05	20 22 56.7	111.03
8	1 37 39.35	9 50 19.3	152.99	8	3 21 26.46	20 34 2.9	109.86
9	1 39 45.40	10 5 37.2	152.37	9	3 23 41.10	20 45 2.1	108.69
10	1 41 51.56	10 20 51.4	151.74	10	3 25 55.96	20 55 54.2	107.50
11	1 43 57.82	10 36 1.8	151.09	11	3 28 11.05	21 6 39.2	106.30
12	1 46 4.18	10 51 8.4	150.44	12	3 30 26.37	21 17 17.0	105.10
13	1 48 10.66	11 6 11.1	149.77	13	3 32 41.92	21 27 47.6	103.88
14	1 50 17.26	11 21 9.7	149.10	14	3 34 57.69	21 38 10.9	102.65
15	1 52 23.98	11 36 4.3	148.40	15	3 37 13.69	21 48 2.8	101.41
16	1 54 30.83	11 50 54.7	147.70	16	3 39 29.91	21 58 2.8	100.17
17	1 56 37.81	12 5 40.9	146.98	17	3 41 46.37	22	
18	1 58 44.92	12 20 22.8	146.25	18	3 44 3.05	22	
19	2 0 52.17	12 35 0.3	145.51	19	3 46 19.95	22	
20	2 2 59.56	12 49 33.3	144.76	20	3 48 37.07		
21	2 5 7.10	13 4 1.8	143.99	21	3 50 54.41		
22	2 7 14.79	13 18 25.8	143.21	22	3 53 11.98		
23	2 9 22.63	13 32 45.1	142.42	23	3 55 29.76		
24	2 11 30.62	N. 13 46 59.6		24	3 57 47.76		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>THURSDAY 17.</i>				<i>SATURDAY 19.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	3 57 47.76	N.23 15 8.8	89.84	0	5 51 25.21	N.27 43 23.2	18.45
1	4 0 5.98	23 24 7.8	88.51	1	5 53 49.35	27 45 13.9	16.88
2	4 2 24.41	23 32 58.9	87.16	2	5 56 13.47	27 46 55.1	15.30
3	4 4 43.06	23 41 41.9	85.81	3	5 58 37.57	27 48 27.0	13.73
4	4 7 1.92	23 50 16.8	84.45	4	6 1 1.65	27 49 49.4	12.16
5	4 9 20.98	23 58 43.5	83.09	5	6 3 25.69	27 51 2.3	10.59
6	4 11 40.25	24 7 2.0	81.71	6	6 5 49.69	27 52 5.9	9.03
7	4 13 59.73	24 15 12.2	80.32	7	6 8 13.65	27 53 0.0	7.46
8	4 16 19.40	24 23 14.2	78.93	8	6 10 37.55	27 53 44.8	5.90
9	4 18 39.27	24 31 7.8	77.53	9	6 13 1.39	27 54 20.2	4.33
10	4 20 59.33	24 38 53.0	76.12	10	6 15 25.17	27 54 46.2	2.77
11	4 23 19.59	24 46 29.7	74.70	11	6 17 48.88	27 55 2.8	1.21
12	4 25 40.03	24 53 57.9	73.28	12	6 20 12.50	27 55 10.1	0.34
13	4 28 0.66	25 1 17.6	71.85	13	6 22 36.03	27 55 8.1	1.89
14	4 30 21.48	25 8 28.7	70.41	14	6 24 59.47	27 54 56.7	3.44
15	4 32 42.47	25 15 31.1	68.96	15	6 27 22.81	27 54 36.1	4.98
16	4 35 3.64	25 22 24.8	67.51	16	6 29 46.04	27 54 6.2	6.53
17	4 37 24.98	25 29 9.9	66.05	17	6 32 9.16	27 53 27.1	8.06
18	4 39 46.48	25 35 46.2	64.58	18	6 34 32.16	27 52 38.7	9.60
19	4 42 8.15	25 42 13.6	63.10	19	6 36 55.03	27 51 41.1	11.13
20	4 44 29.98	25 48 32.2	61.62	20	6 39 17.76	27 50 34.3	12.65
21	4 46 51.96	25 54 42.0	60.14	21	6 41 40.36	27 49 18.4	14.17
22	4 49 14.09	26 0 42.8	58.65	22	6 44 2.81	27 47 53.4	15.69
23	4 51 36.37	N.26 6 34.7	57.15	23	6 46 25.11	N.27 46 19.3	17.20
<i>FRIDAY 18.</i>				<i>SUNDAY 20.</i>			
0	4 53 58.79	N.26 12 17.6	55.64	0	6 48 47.25	N.27 44 36.1	18.71
1	4 56 21.35	26 17 51.5	54.14	1	6 51 9.23	27 42 43.9	20.21
2	4 58 44.04	26 23 16.3	52.62	2	6 53 31.03	27 40 42.6	21.70
3	5 1 6.85	26 28 32.0	51.10	3	6 55 52.66	27 38 32.4	23.19
4	5 3 29.79	26 33 38.6	49.58	4	6 58 14.11	27 36 13.3	24.67
5	5 5 52.84	26 38 36.1	48.05	5	7 0 35.36	27 33 45.3	26.14
6	5 8 16.00	26 43 24.4	46.52	6	7 2 56.42	27 31 8.5	27.61
7	5 10 39.27	26 48 3.5	44.98	7	7 5 17.28	27 28 22.8	29.07
8	5 13 2.64	26 52 33.4	43.44	8	7 7 37.94	27 25 28.4	30.53
9	5 15 26.10	26 56 54.1	41.90	9	7 9 58.38	27 22 25.2	31.97
10	5 17 49.65	27 1 5.5	40.35	10	7 12 18.60	27 19 13.4	33.41
11	5 20 13.28	27 5 7.6	38.80	11	7 14 38.60	27 15 52.9	34.85
12	5 22 36.99	27 9 0.4	37.25	12	7 16 58.37	27 12 23.8	36.27
13	5 25 0.77	27 12 43.9	35.69	13	7 19 17.91	27 8 46.2	37.69
14	5 27 24.61	27 16 18.0	34.13	14	7 21 37.21	27 5 0.1	39.10
15	5 29 48.51	27 19 42.8	32.57	15	7 23 56.27	27 1 5.5	40.50
16	5 32 12.47	27 22 58.3	31.01	16	7 26 15.08	26 57 2.5	41.89
17	5 34 36.47	27 26 4.3	29.44	17	7 28 33.64	26 52 51.2	43.27
18	5 37 0.51	27 29 1.0	27.88	18	7 30 51.94	26 48 31.6	44.65
19	5 39 24.58	27 31 48.2	26.31	19	7 33 9.98	26 44 3.7	46.01
20	5 41 48.68	27 34 26.1	24.74	20	7 35 27.76	26 39 27.6	47.37
21	5 44 12.80	27 36 54.5	23.17	21	7 37 45.26	26 34 43.3	48.72
22	5 46 36.93	27 39 13.5	21.60	22	7 40 2.49	26 29 51.0	50.06
23	5 49 1.07	27 41 23.1	20.02	23	7 42 19.44	26 24 50.6	51.39
	5 51 25.21	N.27 43 23.2		24	7 44 36.11	N.26 19 42.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
<i>MONDAY 21.</i>				<i>WEDNESDAY 23.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	7 44 36.11	N.26 19 42.3	52.71	0	9 27 39.88	N.19 56 51.3	103.68
1	7 46 52.49	26 14 26.0	54.02	1	9 29 40.56	19 46 29.2	104.47
2	7 49 8.59	26 9 1.9	55.33	2	9 31 40.91	19 36 2.4	105.25
3	7 51 24.39	26 3 29.9	56.62	3	9 33 40.94	19 25 30.9	106.03
4	7 53 39.90	25 57 50.2	57.90	4	9 35 40.66	19 14 54.7	106.79
5	7 55 55.10	25 52 2.8	59.17	5	9 37 40.05	19 4 14.0	107.54
6	7 58 10.01	25 46 7.8	60.44	6	9 39 39.13	18 53 28.8	108.28
7	8 0 24.61	25 40 5.2	61.69	7	9 41 37.90	18 42 39.1	109.01
8	8 2 38.90	25 33 55.0	62.93	8	9 43 36.36	18 31 45.0	109.73
9	8 4 52.88	25 27 37.4	64.16	9	9 45 34.50	18 20 46.6	110.44
10	8 7 6.54	25 21 12.5	65.38	10	9 47 32.34	18 9 44.0	111.14
11	8 9 19.89	25 14 40.2	66.60	11	9 49 29.88	17 58 37.2	111.83
12	8 11 32.92	25 8 0.6	67.80	12	9 51 27.11	17 47 26.2	112.51
13	8 13 45.63	25 1 13.8	68.99	13	9 53 24.05	17 36 11.1	113.18
14	8 15 58.01	24 54 19.9	70.17	14	9 55 20.69	17 24 52.0	113.84
15	8 18 10.07	24 47 18.9	71.33	15	9 57 17.04	17 13 29.0	114.49
16	8 20 21.81	24 40 10.9	72.49	16	9 59 13.09	17 2 2.1	115.12
17	8 22 33.21	24 32 56.0	73.64	17	10 1 8.86	16 50 31.4	115.75
18	8 24 44.29	24 25 34.2	74.77	18	10 3 4.34	16 38 56.9	116.37
19	8 26 55.03	24 18 5.5	75.90	19	10 4 59.54	16 27 18.6	116.98
20	8 29 5.44	24 10 30.1	77.01	20	10 6 54.46	16 15 36.7	117.58
21	8 31 15.52	24 2 48.1	78.11	21	10 8 49.10	16 3 51.3	118.17
22	8 33 25.26	23 54 59.4	79.20	22	10 10 43.47	15 52 2.3	118.75
23	8 35 34.66	N.23 47 4.2	80.28	23	10 12 37.56	N.15 40 9.8	119.32
<i>TUESDAY 22.</i>				<i>THURSDAY 24.</i>			
0	8 37 43.73	N.23 39 2.5	81.35	0	10 14 31.39	N.15 28 13.9	119.87
1	8 39 52.46	23 30 54.4	82.40	1	10 16 24.95	15 16 14.7	120.42
2	8 42 0.85	23 22 40.0	83.45	2	10 18 18.26	15 4 12.1	120.96
3	8 44 8.90	23 14 19.3	84.49	3	10 20 11.30	14 52 6.3	121.50
4	8 46 16.61	23 5 52.4	85.51	4	10 22 4.09	14 39 57.3	122.02
5	8 48 23.98	22 57 19.3	86.52	5	10 23 56.62	14 27 45.2	122.53
6	8 50 31.01	22 48 40.2	87.53	6	10 25 48.91	14 15 30.0	123.04
7	8 52 37.71	22 39 55.0	88.52	7	10 27 40.95	14 3 11.8	123.53
8	8 54 44.06	22 31 3.9	89.50	8	10 29 32.75	13 50 50.6	124.02
9	8 56 50.07	22 22 6.9	90.47	9	10 31 24.31	13 38 26.5	124.50
10	8 58 55.74	22 13 4.1	91.43	10	10 33 15.64	13 25 59.5	124.96
11	9 1 1.08	22 3 55.6	92.37	11	10 35 6.73	13 13 29.8	125.42
12	9 3 6.07	21 54 41.3	93.31	12	10 36 57.59	13 0 57.2	125.88
13	9 5 10.73	21 45 21.4	94.24	13	10 38 48.23	12 48 21.9	126.32
14	9 7 15.05	21 35 56.0	95.15	14	10 40 38.65	12 35 44.0	126.75
15	9 9 19.03	21 26 25.1	96.05	15	10 42 28.85	12 23 3.5	127.18
16	9 11 22.67	21 16 48.8	96.94	16	10 44 18.83	12 10 20.4	127.60
17	9 13 25.98	21 7 7.2	97.82	17	10 46 8.61	11 57 34.8	128.00
18	9 15 28.96	20 57 20.2	98.69	18	10 47 58.18	11 44 46.8	128.40
19	9 17 31.61	20 47 28.0	99.55	19	10 49 47.54	11 31 56.4	128.80
20	9 19 33.92	20 37 30.7	100.40	20	10 51 36.71	11 19 3.6	129.18
21	9 21 35.90	20 27 28.3	101.24	21	10 53 25.68	11 6 8.5	129.56
22	9 23 37.56	20 17 20.9	102.06	22	10 55 14.46	10 53 11.2	129.92
23	9 25 38.88	20 7 8.6	102.88	23	10 57 3.06	10 40 11.7	130.27
24	9 27 39.88	N.19 56 51.3		24	10 58 51.48	N.10 27 10.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>FRIDAY 25.</i>				<i>SUNDAY 27.</i>			
0	10 58 51.48	N. 10 27 10.0	130.63	0	12 23 19.04	S. 0 25 42.7	138.88
1	11 0 39.71	10 14 6.2	130.98	1	12 25 3.51	0 39 36.0	138.88
2	11 2 27.77	10 1 0.4	131.31	2	12 26 48.01	0 53 29.3	138.88
3	11 4 15.65	9 47 52.5	131.64	3	12 28 32.55	1 7 22.6	138.87
4	11 6 3.37	9 34 42.7	131.96	4	12 30 17.12	1 21 15.8	138.86
5	11 7 50.92	9 21 30.9	132.27	5	12 32 1.73	1 35 9.0	138.84
6	11 9 38.31	9 8 17.3	132.57	6	12 33 46.39	1 49 2.0	138.81
7	11 11 25.55	8 55 1.9	132.87	7	12 35 31.10	2 2 54.8	138.77
8	11 13 12.63	8 41 44.6	133.16	8	12 37 15.87	2 16 47.5	138.73
9	11 14 59.56	8 28 25.7	133.44	9	12 39 0.69	2 30 39.9	138.68
10	11 16 46.36	8 15 5.1	133.71	10	12 40 45.58	2 44 32.0	138.63
11	11 18 33.01	8 1 42.8	133.98	11	12 42 30.55	2 58 23.8	138.57
12	11 20 19.52	7 48 18.9	134.24	12	12 44 15.58	3 12 15.2	138.50
13	11 22 5.90	7 34 53.5	134.49	13	12 46 0.69	3 26 6.2	138.42
14	11 23 52.16	7 21 26.5	134.73	14	12 47 45.89	3 39 56.7	138.34
15	11 25 38.29	7 7 58.1	134.97	15	12 49 31.18	3 53 46.8	138.25
16	11 27 24.30	6 54 28.3	135.20	16	12 51 16.56	4 7 36.3	138.16
17	11 29 10.20	6 40 57.1	135.42	17	12 53 2.03	4 21 25.3	138.06
18	11 30 55.99	6 27 24.6	135.64	18	12 54 47.61	4 35 13.6	137.95
19	11 32 41.67	6 13 50.8	135.84	19	12 56 33.30	4 49 1.3	137.83
20	11 34 27.24	6 0 15.7	136.04	20	12 58 19.10	5 2 48.3	137.71
21	11 36 12.72	5 46 39.5	136.24	21	13 0 5.01	5 16 34.6	137.58
22	11 37 58.10	5 33 2.1	136.42	22	13 1 51.04	5 30 20.0	137.44
23	11 39 43.40	N. 5 19 23.5	136.60	23	13 3 37.20	S. 5 44 4.7	137.30
<i>SATURDAY 26.</i>				<i>MONDAY 28.</i>			
0	11 41 28.60	N. 5 5 43.9	136.77	0	13 5 23.48	S. 5 57 48.5	137.15
1	11 43 13.72	4 52 3.3	136.94	1	13 7 9.90	6 11 31.4	136.99
2	11 44 58.77	4 38 21.6	137.10	2	13 8 56.46	6 25 13.4	136.83
3	11 46 43.75	4 24 39.0	137.25	3	13 10 43.17	6 38 54.3	136.66
4	11 48 28.66	4 10 55.5	137.39	4	13 12 30.03	6 52 34.3	136.48
5	11 50 13.50	3 57 11.2	137.53	5	13 14 17.04	7 6 13.1	136.29
6	11 51 58.28	3 43 26.0	137.66	6	13 16 4.20	7 19 50.9	136.10
7	11 53 43.01	3 29 40.0	137.79	7	13 17 51.53	7 33 27.4	135.89
8	11 55 27.68	3 15 53.3	137.90	8	13 19 39.04	7 47 2.8	135.68
9	11 57 12.31	3 2 5.9	138.01	9	13 21 26.71	8 0 36.9	135.47
10	11 58 56.89	2 48 17.8	138.12	10	13 23 14.56	8 14 9.7	135.24
11	12 0 41.44	2 34 29.1	138.22	11	13 25 2.59	8 27 41.1	135.01
12	12 2 25.95	2 20 39.8	138.31	12	13 26 50.81	8 41 11.2	134.77
13	12 4 10.43	2 6 50.0	138.39	13	13 28 39.22	8 54 39.8	134.52
14	12 5 54.89	1 52 59.6	138.47	14	13 30 27.83	9 8 6.9	134.27
15	12 7 39.32	1 39 8.8	138.54	15	13 32 16.64	9 21 32.5	134.00
16	12 9 23.74	1 25 17.6	138.60	16	13 34 5.66	9 34 56.5	133.73
17	12 11 8.15	1 11 26.0	138.66	17	13 35 54.89	9 48 18.9	133.45
18	12 12 52.55	0 57 34.1	138.71	18	13 37 44.33	10 1 39.6	133.17
19	12 14 36.95	0 43 41.8	138.75	19	13 39 34.00	10 14 58.6	132.87
20	12 16 21.35	0 29 49.3	138.79	20	13 41 23.89	10 28 15.8	132.57
21	12 18 5.75	0 15 56.5	138.82	21	13 43 14.01	10 41 31.2	132.25
22	12 19 50.16	N. 0 2 3.6	138.85	22	13 45 4.37	10 54 44.8	131.93
23	12 21 34.59	S. 0 11 49.5	138.87	23	13 46 54.97	11 7 56.4	131.61
24	12 23 19.04	S. 0 25 42.7		24	13 48 45.81	S. 11 21 6.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>TUESDAY 29.</i>				<i>THURSDAY 31.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	13 48 45.81	S. 11 21 6.0	131.27	0	15 23 44.98	S. 20 55 11.0	103.07
1	13 50 36.90	11 34 13.6	130.93	1	15 25 53.34	21 5 29.4	102.18
2	13 52 28.25	11 47 19.2	130.57	2	15 28 2.16	21 15 42.5	101.28
3	13 54 19.85	12 0 22.6	130.21	3	15 30 11.44	21 25 50.2	100.37
4	13 56 11.72	12 13 23.9	129.84	4	15 32 21.17	21 35 52.4	99.44
5	13 58 3.85	12 26 22.9	129.46	5	15 34 31.37	21 45 49.0	98.50
6	13 59 56.26	12 39 19.6	129.07	6	15 36 42.04	21 55 40.0	97.54
7	14 1 48.96	12 52 14.0	128.67	7	15 38 53.17	22 5 25.3	96.57
8	14 3 41.93	13 5 6.0	128.26	8	15 41 4.76	22 15 4.7	95.59
9	14 5 35.19	13 17 55.5	127.84	9	15 43 16.83	22 24 38.2	94.59
10	14 7 28.74	13 30 42.6	127.41	10	15 45 29.38	22 34 5.7	93.57
11	14 9 22.59	13 43 27.0	126.97	11	15 47 42.39	22 43 27.2	92.54
12	14 11 16.75	13 56 8.9	126.53	12	15 49 55.88	22 52 42.4	91.50
13	14 13 11.22	14 8 48.1	126.07	13	15 52 9.85	23 1 51.4	90.44
14	14 15 5.99	14 21 24.5	125.60	14	15 54 24.30	23 10 54.0	89.36
15	14 17 1.07	14 33 58.1	125.13	15	15 56 39.23	23 19 50.2	88.27
16	14 18 56.48	14 46 28.8	124.64	16	15 58 54.64	23 28 39.8	87.16
17	14 20 52.21	14 58 56.7	124.14	17	16 1 10.53	23 37 22.8	86.04
18	14 22 48.28	15 11 21.5	123.64	18	16 3 26.91	23 45 59.1	84.90
19	14 24 44.68	15 23 43.4	123.12	19	16 5 43.77	23 54 28.5	83.75
20	14 26 41.41	15 36 2.1	122.59	20	16 8 1.12	24 2 51.0	82.58
21	14 28 38.49	15 48 17.6	122.05	21	16 10 18.95	24 11 6.5	81.40
22	14 30 35.92	16 0 29.9	121.50	22	16 12 37.26	24 19 14.9	80.20
23	14 32 33.70	S. 16 12 38.9	120.94	23	16 14 56.06	S. 24 27 16.0	78.98
<i>WEDNESDAY 30.</i>				<i>FRIDAY, FEB. 1.</i>			
0	14 34 31.83	S. 16 24 44.6	120.37	0	16 17 15.35	S. 24 35 9.9	
1	14 36 30.33	16 36 46.8	119.79				
2	14 38 29.19	16 48 45.6	119.20				
3	14 40 28.43	17 0 40.8	118.59				
4	14 42 28.04	17 12 32.3	117.98				
5	14 44 28.03	17 24 20.2	117.35				
6	14 46 28.40	17 36 4.3	116.71				
7	14 48 29.16	17 47 44.6	116.06				
8	14 50 30.31	17 59 20.9	115.40				
9	14 52 31.85	18 10 53.3	114.72				
10	14 54 33.80	18 22 21.7	114.04				
11	14 56 36.14	18 33 45.9	113.34				
12	14 58 38.89	18 45 5.9	112.63				
13	15 0 42.05	18 56 21.7	111.90				
14	15 2 45.63	19 7 33.1	111.17				
15	15 4 49.62	19 18 40.1	110.42				
16	15 6 54.04	19 29 42.6	109.65				
17	15 8 58.88	19 40 40.5	108.88				
18	15 11 4.16	19 51 33.7	108.09				
19	15 13 9.86	20 2 22.3	107.28				
20	15 15 16.00	20 13 6.0	106.47				
21	15 17 22.58	20 23 44.8	105.64				
22	15 19 29.60	20 34 18.6	104.79				
23	15 21 37.06	20 44 47.4	103.94				
24	15 23 44.98	S. 20 55 11.0					

PHASES OF THE MOON.

- | | d | h | m |
|---------------------|----|----|------|
| ● New Moon - - | 7 | 11 | 16.9 |
| ☽ First Quarter - - | 14 | 3 | 42.5 |
| ○ Full Moon - - | 21 | 15 | 28.8 |
| ☾ Last Quarter - - | 29 | 20 | 34.6 |

- | | |
|---------------------|---|
| ☾ Perigee - - - - - | f |
| ☾ Apogee - - - - - | f |

MEAN TIME.											
LUNAR DISTANCES.											
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.			VI ^b .			IX ^b .		
			°	'	"	°	'	"	°	'	"
1	Pollux W.	89 56 5	2961	91 27 7	2950	92 58 23	2938	94 29 53	2927		
	Regulus W.	53 26 6	2975	54 56 50	2964	56 27 48	2952	57 59 1	2941		
	Venus E.	33 26 50	3439	32 5 18	3432	30 43 38	3425	29 21 50	3413		
	Antares E.	46 44 59	2961	45 13 58	2951	43 42 44	2940	42 11 16	2928		
	SUN E.	79 3 38	3357	77 40 32	3345	76 17 13	3332	74 53 39	3321		
2	Regulus W.	65 39 3	2874	67 11 55	2860	68 45 5	2846	70 18 33	2831		
	Mars W.	24 49 52	3009	26 19 54	2993	27 50 15	2979	29 20 54	2964		
	Antares E.	34 30 9	2866	32 57 7	2852	31 23 47	2839	29 50 10	2825		
	SUN E.	67 52 8	3253	66 27 1	3237	65 1 36	3223	63 35 54	3208		
3	Regulus W.	78 10 52	2753	79 46 22	2737	81 22 13	2721	82 58 25	2704		
	Mars W.	36 59 4	2884	38 31 44	2867	40 4 45	2849	41 38 9	2833		
	Spica ♃ W.	24 10 4	2772	25 45 9	2753	27 20 38	2733	28 56 34	2713		
	SUN E.	56 22 45	3127	54 55 8	3111	53 27 12	3094	51 58 55	3078		
4	Regulus W.	91 5 3	2620	92 43 31	2603	94 22 22	2585	96 1 37	2569		
	Mars W.	49 30 44	2745	51 6 24	2727	52 42 28	2709	54 18 56	2692		
	Spica ♃ W.	37 2 22	2623	38 40 45	2605	40 19 33	2587	41 58 46	2569		
	SUN E.	44 32 21	2993	43 2 0	2977	41 31 18	2961	40 0 16	2945		
10	SUN W.	34 50 26	2489	36 31 55	2487	38 13 27	2487	39 54 58	2487		
	α Arietis E.	72 44 53	2194	70 56 16	2197	69 7 44	2201	67 19 18	2207		
	Aldebaran E.	103 8 36	2179	101 19 36	2180	99 30 39	2182	97 41 45	2185		
	Saturn E.	120 28 58	2132	118 38 47	2133	116 48 39	2135	114 58 33	2137		
11	SUN W.	48 22 1	2502	50 3 11	2507	51 44 14	2512	53 25 10	2519		
	α Arietis E.	58 19 24	2242	56 31 59	2252	54 44 48	2262	52 57 52	2272		
	Aldebaran E.	88 38 34	2207	86 50 17	2214	85 2 10	2220	83 14 12	2226		
	Saturn E.	105 49 17	2157	103 59 45	2163	102 10 22	2169	100 21 8	2176		
12	SUN W.	61 47 33	2555	63 27 30	2563	65 7 16	2572	66 46 50	2581		
	Jupiter W.	20 17 58	2330	22 3 13	2332	23 48 26	2335	25 33 35	2339		
	α Arietis E.	44 7 40	2342	42 22 41	2359	40 38 7	2378	38 54 0	2398		
	Aldebaran E.	74 17 7	2267	72 30 19	2277	70 43 45	2287	68 57 26	2296		
	Saturn E.	91 17 30	2212	89 29 21	2220	87 41 24	2229	85 53 39	2238		
13	SUN W.	75 1 28	2629	76 39 44	2639	78 17 46	2650	79 55 33	2660		
	Fomalhaut W.	39 46 17	2766	41 21 29	2744	42 57 11	2724	44 33 19	2709		
	Jupiter W.	34 17 23	2372	36 1 38	2380	37 45 41	2389	39 29 31	2398		
	Aldebaran E.	60 9 41	2353	58 24 58	2365	56 40 33	2377	54 56 26	2390		
	Saturn E.	76 58 21	2285	75 12 0	2295	73 25 53	2305	71 40 1	2316		
	Pollux E.	103 46 55	2288	102 0 38	2298	100 14 35	2308	98 28 47	2318		
14	SUN W.	88 0 56	2714	89 37 17	2726	91 13 23	2737	92 49 14	2747		
	Fomalhaut W.	52 37 55	2669	54 15 17	2666	55 52 42	2664	57 30 10	2664		
	Jupiter W.	48 5 28	2445	49 47 59	2455	51 30 15	2465	53 12 17	2475		
	Aldebaran E.	46 20 44	2463	44 38 39	2479	42 56 57	2497	41 15 40	2515		
	Saturn E.	62 54 32	2370	61 10 14	2380	59 26 11	2391	57 42 24	2403		
	Pollux E.	89 43 25	2368	87 59 4	2379	86 14 59	2389	84 31 8	2399		
15	SUN W.	100 44 51	2803	102 19 15	2814	103 53 24	2825	105 27 19	2837		
	Fomalhaut W.	65 37 7	2676	67 14 19	2681	68 51 24	2686	70 28 23	2691		
	Jupiter W.	61 38 59	2525	63 19 37	2535	65 0 2	2545	66 40 12	2555		

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
1	Pollux W.	96 1 37	2915	97 33 37	2903	99 5 52	2890	100 38 24	2876
	Regulus W.	59 30 28	2928	61 2 12	2915	62 34 12	2902	64 6 29	2888
	Venus E.	27 59 55	3414	26 37 54	3409	25 15 48	3405	23 53 37	3403
	Antares E.	40 39 33	2917	39 7 36	2905	37 35 23	2892	36 2 54	2880
	SUN E.	73 29 52	3307	72 5 49	3294	70 41 31	3281	69 16 58	3267
2	Regulus W.	71 52 21	2815	73 26 29	2801	75 0 56	2785	76 35 44	2769
	Mars W.	30 51 52	2949	32 23 9	2932	33 54 47	2916	35 26 45	2900
	Antares E.	28 16 14	2811	26 42 0	2797	25 7 28	2782	23 32 37	2768
	SUN E.	62 9 54	3192	60 43 35	3177	59 16 58	3160	57 50 1	3144
3	Regulus W.	84 35 0	2687	86 11 57	2671	87 49 16	2654	89 26 58	2637
	Mars W.	43 11 54	2815	44 46 2	2798	46 20 33	2780	47 55 27	2763
	Spica μ W.	30 32 54	2696	32 9 39	2678	33 46 49	2660	35 24 23	2641
	SUN E.	50 30 18	3061	49 1 20	3043	47 32 1	3026	46 2 21	3010
4	Regulus W.	97 41 15	2552	99 21 16	2535	101 1 40	2518	102 42 28	2502
	Mars W.	55 55 47	2674	57 33 2	2656	59 10 41	2638	60 48 44	2621
	Spica μ W.	43 38 23	2552	45 18 24	2534	46 58 50	2517	48 39 40	2500
	SUN E.	38 28 54	2928	36 57 11	2914	35 25 10	2899	33 52 50	2885
10	SUN W.	41 36 29	2489	43 17 57	2491	44 59 23	2494	46 40 44	2497
	α Arietis E.	65 31 1	2212	63 42 51	2219	61 54 51	2226	60 7 2	2233
	Aldebaran E.	95 52 55	2189	94 4 11	2192	92 15 32	2196	90 26 59	2202
	Saturn E.	113 8 31	2140	111 18 33	2145	109 28 42	2148	107 38 56	2153
11	SUN W.	55 5 57	2525	56 46 36	2532	58 27 5	2539	60 7 24	2546
	α Arietis E.	51 11 12	2285	49 24 50	2297	47 38 46	2311	45 53 2	2326
	Aldebaran E.	81 26 24	2233	79 38 46	2242	77 51 21	2249	76 4 7	2259
	Saturn E.	98 32 4	2182	96 43 9	2189	94 54 25	2196	93 5 52	2204
12	SUN W.	68 26 11	2590	70 5 20	2599	71 44 16	2609	73 22 59	2619
	Jupiter W.	27 18 38	2344	29 3 33	2350	30 48 20	2357	32 32 57	2364
	α Arietis E.	37 10 23	2421	35 27 18	2446	33 44 48	2474	32 2 58	2504
	Aldebaran E.	67 11 21	2397	65 25 32	2318	63 39 59	2329	61 54 42	2340
	Saturn E.	84 6 8	2247	82 18 50	2256	80 31 46	2266	78 44 56	2276
13	SUN W.	81 33 7	2671	83 10 26	2681	84 47 31	2692	86 24 21	2704
	Fomalhaut W.	46 9 47	2696	47 46 32	2686	49 23 30	2679	51 0 38	2672
	Jupiter W.	41 13 9	2407	42 56 34	2416	44 39 46	2426	46 22 44	2436
	Aldebaran E.	53 12 37	2404	51 29 8	2418	49 45 59	2433	48 3 11	2448
	Saturn E.	69 54 25	2326	68 9 3	2337	66 23 57	2348	64 39 7	2358
	Pollux E.	96 43 14	2327	94 57 54	2338	93 12 50	2348	91 28 0	2358
14	SUN W.	94 24 51	2759	96 0 13	2770	97 35 20	2781	99 10 13	2792
	Fomalhaut W.	59 7 38	2666	60 45 4	2666	62 22 29	2669	63 59 50	2672
	Jupiter W.	54 54 6	2485	56 35 40	2495	58 17 1	2505	59 58 7	2515
	Aldebaran E.	39 34 47	2534	37 54 21	2555	36 14 24	2577	34 34 57	2600
	Saturn E.	55 58 53	2414	54 15 38	2425	52 32 39	2437	50 49 57	2448
	Pollux E.	82 47 32	2410	81 4 11	2419	79 21 4	2429	77 38 11	2440
15	SUN W.	107 0 59	2848	108 34 25	2859	110 7 36	2870	111 40 34	2881
	Fomalhaut W.	72 5 15	2698	73 41 58	2704	75 18 33	2710	76 54 59	2717
	Jupiter W.	68 20 9	2566	69 59 51	2575	71 39 21	2585	73 18 36	2595

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			P.L. of diff.	III ^h .			P.L. of diff.	VI ^h .			P.L. of diff.	IX ^h .			P.L. of diff.
		°	'	"		°	'	"		°	'	"		°	'	"	
15	α Pegasi W.	46	56	18	3124	48	23	58	3099	49	52	9	3078	51	20	46	30
	Saturn E.	49	7	31	2460	47	25	22	2472	45	43	30	2484	44	1	55	24
	Pollux E.	75	55	33	2450	74	13	10	2460	72	31	1	2470	70	49	6	24
16	SUN W.	113	13	17	2891	114	45	47	2903	116	18	2	2913	117	50	4	29
	Fomalhaut W.	78	31	16	2725	80	7	23	2732	81	43	20	2741	83	19	6	27
	Jupiter W.	74	57	38	2634	76	36	27	2615	78	15	2	2624	79	53	24	26
	α Pegasi W.	58	48	27	3002	60	18	37	2997	61	48	54	2992	63	19	17	29
	Saturn E.	35	38	26	2563	33	58	40	2578	32	19	15	2593	30	40	11	26
	Pollux E.	62	23	1	2530	60	42	30	2540	59	2	12	2549	57	22	7	25
Regulus E.	98	57	58	2538	97	17	38	2548	95	37	31	2557	93	57	37	25	
17	SUN W.	125	26	46	2978	126	57	26	2989	128	27	52	3001	129	58	4	30
	Fomalhaut W.	91	15	9	2793	92	49	46	2802	94	24	11	2813	95	58	22	28
	Jupiter W.	88	2	3	2681	89	39	8	2689	91	16	2	2699	92	52	43	27
	α Pegasi W.	70	51	49	2986	72	22	19	2989	73	52	46	2992	75	23	9	29
	Pollux E.	49	4	59	2606	47	26	12	2615	45	47	37	2624	44	9	15	26
	Regulus E.	85	41	20	2613	84	2	43	2622	82	24	18	2631	80	46	5	26
18	Jupiter W.	100	53	8	2753	102	28	38	2762	104	3	56	2771	105	39	2	27
	α Pegasi W.	82	53	51	3020	84	23	39	3026	85	53	19	3033	87	22	51	30
	α Arietis W.	39	45	33	2814	41	19	43	2814	42	53	52	2815	44	28	1	28
	Pollux E.	36	0	31	2679	34	23	23	2688	32	46	27	2697	31	9	43	27
	Regulus E.	72	38	3	2684	71	1	2	2693	69	24	13	2702	67	47	36	27
	Mars E.	119	19	54	2786	117	45	8	2795	116	10	34	2803	114	36	10	28
19	α Arietis W.	52	18	0	2832	53	51	47	2837	55	25	27	2842	56	59	1	28
	Aldebaran W.	22	30	52	3074	23	59	33	3043	25	28	53	3019	26	58	42	30
	Regulus E.	59	47	23	2754	58	11	55	2763	56	36	38	2772	55	1	33	27
	Mars E.	106	46	55	2853	105	13	36	2862	103	40	28	2870	102	7	30	28
20	α Arietis W.	64	45	7	2876	66	17	57	2881	67	50	40	2887	69	23	15	28
	Aldebaran W.	34	32	12	2954	36	3	22	2951	37	34	36	2950	39	5	51	29
	Regulus E.	47	8	58	2824	45	35	2	2833	44	1	17	2842	42	27	44	28
	Mars E.	94	25	13	2917	92	53	16	2925	91	21	29	2933	89	49	52	29
	Spica ϖ E.	101	8	40	2810	99	34	25	2817	98	0	19	2826	96	26	25	28
21	α Arietis W.	77	4	0	2928	78	35	44	2935	80	7	18	2942	81	38	43	29
	Aldebaran W.	46	41	57	2958	48	13	2	2962	49	44	2	2966	51	14	58	29
	Saturn W.	29	52	57	2918	31	24	53	2920	32	56	46	2923	34	28	36	29
	Regulus E.	34	43	1	2900	33	10	42	2910	31	38	36	2921	30	6	44	29
	Mars E.	82	14	15	2980	80	43	37	2987	79	13	8	2995	77	42	49	30
Spica ϖ E.	88	39	22	2872	87	6	27	2880	85	33	42	2887	84	1	7	28	
22	α Arietis W.	89	13	36	2985	90	44	8	2993	92	14	50	2999	93	44	44	30
	Aldebaran W.	58	48	13	2994	60	18	33	2999	61	48	47	3004	63	18	55	30
	Saturn W.	42	6	37	2947	43	37	56	2952	45	9	9	2958	46	40	15	29
	Mars E.	70	13	31	3039	68	44	7	3046	67	14	51	3054	65	45	45	30
	Spica ϖ E.	76	20	37	2932	74	48	59	2939	73	17	30	2946	71	46	10	29
23	Aldebaran W.	70	47	50	3037	72	17	17	3043	73	46	37	3048	75	15	50	30
	Saturn W.	54	14	3	2990	55	44	28	2995	57	14	47	3001	58	44	58	30
	Pollux W.	26	38	24	2992	28	8	47	2997	29	39	3	3002	31	9	13	30
	Mars E.	58	22	17	3093	56	53	59	3100	55	25	50	3106	53	57	48	31

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .									
		P.L. of diff.	°	'	°	'	°	'	P.L. of diff.	°	'						
15	α Pegasi W.	3044	52	49	45	3030	54	19	3	3019	55	48	38	3010	57	18	27
	Saturn E.	2510	42	20	37	2522	40	39	37	2535	38	58	55	2549	37	18	31
	Pollux E.	2490	69	7	25	2500	67	25	58	2510	65	44	45	2520	64	3	46
16	SUN W.	2935	119	21	52	2946	120	53	26	2957	122	24	46	2968	123	55	53
	Fomalhaut W.	2757	84	54	42	2766	86	30	6	2775	88	5	19	2784	89	40	20
	Jupiter W.	2643	81	31	34	2652	83	9	30	2662	84	47	14	2672	86	24	45
	α Pegasi W.	2986	64	49	44	2985	66	20	14	2984	67	50	45	2985	69	21	18
	Saturn E.	2627	29	1	30	2647	27	23	12	2668	25	45	21	2692	24	7	58
	Pollux E.	2568	55	42	15	2578	54	2	36	2588	52	23	11	2596	50	43	59
	Regulus E.	2576	92	17	56	2585	90	38	28	2594	88	59	13	2604	87	20	10
17	SUN W.	3022	131	28	3	3033	132	57	48	3044	134	27	20	3056	135	56	38
	Fomalhaut W.	2833	97	32	20	2844	99	6	5	2855	100	39	36	2866	102	12	53
	Jupiter W.	2717	94	29	12	2726	96	5	29	2735	97	41	34	2744	99	17	27
	α Pegasi W.	2998	76	53	29	3004	78	23	44	3008	79	53	52	3014	81	23	55
	Pollux E.	2643	42	31	6	2652	40	53	9	2661	39	15	24	2669	37	37	52
	Regulus E.	2649	79	8	5	2658	77	30	16	2667	75	52	40	2675	74	15	16
18	Jupiter W.	2788	107	13	57	2797	108	48	41	2805	110	23	13	2814	111	57	34
	α Pegasi W.	3049	88	52	13	3057	90	21	25	3066	91	50	27	3075	93	19	18
	α Arietis W.	2818	46	2	8	2821	47	36	12	2824	49	10	13	2828	50	44	9
	Pollux E.	2716	29	33	11	2725	27	56	52	2734	26	20	45	2744	24	44	50
	Regulus E.	2720	66	11	10	2729	64	34	56	2737	62	58	54	2745	61	23	3
	Mars E.	2820	113	1	58	2828	111	27	56	2837	109	54	5	2845	108	20	25
19	α Arietis W.	2852	58	32	28	2858	60	5	49	2863	61	39	2	2869	63	12	8
	Aldebaran W.	2985	28	28	55	2974	29	59	27	2966	31	30	12	2959	33	1	8
	Regulus E.	2789	53	26	39	2798	51	51	57	2806	50	17	26	2815	48	43	6
	Mars E.	2885	100	34	42	2894	99	2	4	2902	97	29	37	2909	95	57	20
	α Arietis W.	2901	70	55	41	2908	72	27	59	2914	74	0	8	2922	75	32	9
20	Aldebaran W.	2950	40	37	7	2951	42	8	23	2954	43	39	37	2955	45	10	48
	Regulus E.	2861	40	54	23	2870	39	21	14	2880	37	48	17	2890	36	15	33
	Mars E.	2949	88	18	25	2957	86	47	8	2964	85	16	1	2972	83	45	3
	Spica ♍ E.	2841	94	52	40	2849	93	19	5	2856	91	45	41	2865	90	12	26
	α Arietis W.	2956	83	10	0	2964	84	41	8	2970	86	12	6	2978	87	42	56
21	Aldebaran W.	2974	52	45	48	2979	54	16	34	2984	55	47	13	2989	57	17	46
	Saturn W.	2929	36	0	22	2933	37	32	4	2938	39	3	41	2942	40	35	12
	Regulus E.	2945	28	35	7	2957	27	3	45	2970	25	32	38	2985	24	1	48
	Mars E.	3010	76	12	39	3018	74	42	38	3025	73	12	47	3031	71	43	5
	Spica ♍ E.	2902	82	28	42	2910	80	56	26	2918	79	24	20	2925	77	52	24
	α Arietis W.	3014	95	14	48	3022	96	44	44	3030	98	14	30	3035	99	32	3
22	Aldebaran W.	3015	64	48	56	3021	66	18	50	3027	67	48	37	3032	69	36	2
	Saturn W.	2968	48	11	14	2974	49	42	7	2980	51	12	52	2985	53	5	55
	Mars E.	3068	64	16	46	3074	62	47	57	3080	61	19	1	3085	60	7	58
	Spica ♍ E.	2961	70	15	0	2968	68	43	58	2974	67	13		2979	66	11	
	Aldebaran W.	3059	76	44	56	3064	78	13	56	3069	80	1		3074	79	1	
23	Saturn W.	3011	60	15	3	3011	61	45	2	3011	62	45	2	3011	63	45	2
	Pollux W.	3013	32	39	16	3011	34	9	12	3011	35	9	12	3011	36	9	12
	Mars E.	3118	52	29	53	3118	51	2	5	3118	51	2	5	3118	51	2	5

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			III ^b .			VI ^b .			IX ^b .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
23	Spica ♍ E.	64	11	44	2988	62	41	16	2995	61	10	57	3001	59	40	45	3007
	Antares E.	110	4	28	2984	108	33	55	2990	107	3	30	2996	105	33	12	3002
24	Aldebaran W.	82	40	18	3078	84	8	54	3084	85	37	23	3088	87	5	47	3093
	Saturn W.	66	14	20	3031	67	43	54	3036	69	13	22	3040	70	42	45	3048
	Pollux W.	38	38	23	3034	40	7	54	3038	41	37	20	3043	43	6	39	3047
	Mars E.	46	39	23	3140	45	12	2	3145	43	44	47	3149	42	17	37	3154
	Spica ♍ E.	52	11	39	3036	50	42	11	3041	49	12	49	3047	47	43	34	3052
	Antares E.	98	3	34	3030	96	33	58	3035	95	4	29	3039	93	35	5	3044
Venus E.	110	56	12	3509	109	35	58	3515	108	15	51	3520	106	55	49	3525	
25	Saturn W.	78	8	25	3062	79	37	21	3066	81	6	12	3068	82	35	1	3070
	Pollux W.	50	32	4	3065	52	0	56	3069	53	29	44	3071	54	58	29	3071
	Mars E.	35	3	9	3174	33	36	29	3178	32	9	53	3181	30	43	21	3183
	Spica ♍ E.	40	18	44	3073	38	50	2	3077	37	21	24	3081	35	52	51	3083
	Antares E.	86	9	26	3064	84	40	32	3066	83	11	41	3069	81	42	54	3072
	Venus E.	100	16	54	3546	98	57	21	3548	97	37	50	3552	96	18	23	3553
26	Saturn W.	89	58	28	3078	91	27	4	3078	92	55	40	3078	94	24	16	3078
	Pollux W.	62	21	41	3080	63	50	15	3081	65	18	48	3080	66	47	22	3081
	Regulus W.	25	59	28	3128	27	27	4	3124	28	54	45	3120	30	22	30	3116
	Antares E.	74	19	35	3079	72	51	0	3079	71	22	25	3080	69	53	51	3079
	Venus E.	89	41	45	3564	88	22	31	3564	87	3	17	3564	85	44	3	3564
	SUN E.	131	59	45	3499	130	39	20	3498	129	18	54	3497	127	58	27	3497
	Saturn W.	101	47	25	3073	103	16	8	3070	104	44	54	3067	106	13	44	3064
27	Pollux W.	74	10	24	3073	75	39	7	3070	77	7	53	3067	78	36	43	3064
	Regulus W.	37	42	26	3097	39	10	39	3092	40	38	58	3088	42	7	22	3084
	Antares E.	62	30	44	3072	61	2	0	3070	59	33	14	3066	58	4	23	3064
	Venus E.	79	7	45	3557	77	48	24	3555	76	29	0	3552	75	9	33	3548
	SUN E.	121	15	44	3484	119	55	2	3481	118	34	17	3477	117	13	27	3472
	Pollux W.	86	2	9	3039	87	31	33	3033	89	-1	5	3026	90	30	45	3020
28	Regulus W.	49	30	57	3055	51	0	2	3048	52	29	16	3041	53	58	38	3033
	Antares E.	50	38	57	3039	49	9	33	3033	47	40	1	3027	46	10	22	3020
	Venus E.	68	31	11	3524	67	11	13	3518	65	51	9	3512	64	30	58	3505
	SUN E.	110	27	55	3444	109	6	28	3438	107	44	54	3430	106	23	11	3422
	Regulus W.	61	28	3	2989	62	58	30	2978	64	29	10	2968	66	0	3	2957
29	Antares E.	38	39	44	2978	37	9	4	2969	35	38	13	2958	34	7	8	2949
	Venus E.	57	47	54	3463	56	26	48	3454	55	5	32	3444	53	44	5	3432
	SUN E.	99	32	9	3374	98	9	23	3364	96	46	25	3352	95	23	14	3341
	Regulus W.	73	38	6	2896	75	10	30	2882	76	43	12	2869	78	16	11	2855
30	Mars W.	23	25	42	2986	24	56	12	2970	26	27	2	2955	27	58	11	2939
	Spica ♍ W.	19	37	50	2921	21	9	42	2903	22	41	57	2886	24	14	34	2868
	Venus E.	46	53	43	3376	45	30	59	3364	44	8	1	3352	42	44	49	3339
	SUN E.	88	23	45	3275	86	59	4	3260	85	34	6	3246	84	8	51	3230
	Regulus W.	86	5	50	2778	87	40	47	2762	89	16	5	2746	90	51	44	2729
31	Mars W.	35	39	3	2857	37	12	17	2840	38	45	53	2822	40	19	52	2804
	Spica ♍ W.	32	3	11	2783	33	38	1	2766	35	13	14	2748	36	48	50	2730
	Venus E.	35	45	12	3277	34	20	34	3265	32	55	41	3254	31	30	36	3243
	SUN E.	76	57	54	3148	75	30	43	3131	74	3	11	3113	72	35	17	3095

MEAN TIME.									
LUNAR DISTANCES.									
DAY OF the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
23	Spica ♀ E.	58 10 41	3013	56 40 44	3020	55 10 56	3025	53 41 14	3031
	Antares E.	104 3 2	3009	102 33 0	3014	101 3 4	3020	99 33 16	3025
24	Aldebaran W.	88 34 5	3097	90 2 18	3101	91 30 26	3105	92 58 30	3109
	Saturn W.	72 12 2	3048	73 41 15	3052	75 10 23	3056	76 39 26	3060
	Pollux W.	44 35 54	3051	46 5 3	3055	47 34 8	3059	49 3 8	3062
	Mars E.	40 50 33	3159	39 23 35	3163	37 56 42	3167	36 29 53	3171
	Spica ♀ E.	46 14 25	3056	44 45 22	3061	43 16 24	3065	41 47 32	3069
	Antares E.	92 5 47	3049	90 36 35	3052	89 7 27	3057	87 38 25	3060
	Venus E.	105 35 53	3529	104 16 1	3534	102 56 15	3537	101 36 32	3542
25	Saturn W.	84 3 47	3073	85 32 30	3074	87 1 11	3076	88 29 50	3077
	Pollux W.	56 27 12	3075	57 55 52	3077	59 24 30	3078	60 53 6	3079
	Mars E.	29 16 52	3186	27 50 26	3188	26 24 3	3190	24 57 42	3193
	Spica ♀ E.	34 24 21	3087	32 55 55	3090	31 27 33	3093	29 59 15	3096
	Antares E.	80 14 10	3074	78 45 28	3076	77 16 49	3077	75 48 11	3078
	Venus E.	94 58 59	3557	93 39 38	3559	92 20 19	3560	91 1 1	3562
26	Saturn W.	95 52 52	3078	97 21 28	3078	98 50 5	3076	100 18 44	3074
	Pollux W.	68 15 55	3079	69 44 30	3078	71 13 6	3077	72 41 44	3075
	Regulus W.	31 50 20	3112	33 18 15	3109	34 46 14	3105	36 14 18	3101
	Antares E.	68 25 16	3078	66 56 40	3078	65 28 3	3077	63 59 25	3074
	Venus E.	84 24 49	3564	83 5 35	3563	81 46 20	3561	80 27 3	3560
	SUN E.	126 37 59	3495	125 17 29	3493	123 56 57	3490	122 36 22	3488
	27	Saturn W.	107 42 37	3061	109 11 35	3057	110 40 37	3052	112 9 45
Pollux W.		80 5 37	3060	81 34 36	3055	83 3 41	3050	84 32 52	3045
Regulus W.		43 35 51	3078	45 4 27	3073	46 33 10	3067	48 2 0	3061
Antares E.		56 35 29	3059	55 6 29	3055	53 37 24	3051	52 8 14	3045
Venus E.		73 50 2	3544	72 30 27	3540	71 10 47	3535	69 51 2	3530
SUN E.		115 52 32	3468	114 31 32	3463	113 10 26	3457	111 49 14	3451
28	Pollux W.	92 0 33	3012	93 30 31	3004	95 0 39	2995	96 30 58	2986
	Regulus W.	55 28 10	3025	56 57 52	3016	58 27 45	3008	59 57 48	2998
	Antares E.	44 40 34	3012	43 10 36	3005	41 40 29	2997	40 10 12	2988
	Venus E.	63 10 39	3497	61 50 11	3489	60 29 35	3480	59 8 49	3472
	SUN E.	105 1 19	3413	103 39 17	3404	102 17 5	3395	100 54 43	3385
29	Regulus W.	67 31 10	2946	69 2 31	2934	70 34 7	2921	72 5 59	2909
	Antares E.	32 35 51	2938	31 4 20	2927	29 32 35	2915	28 0 35	290
	Venus E.	52 22 25	3422	51 0 34	3411	49 38 30	3400	48 16 13	
	SUN E.	93 59 50	3328	92 36 11	3316	91 12 18	3302	89 48	
30	Regulus W.	79 49 28	2839	81 23 5	2825	82 57 0	2810	84 31	
	Mars W.	29 29 41	2923	31 1 30	2907	32 33 40	2891	34 6	
	Spica ♀ W.	25 47 34	2852	27 20 55	2835	28 54 38	2818	30 28	
	Venus E.	41 21 23	3326	39 57 42	3314	38 33 47	3301	37 1	
	SUN E.	82 43 18	3214	81 17 26	3198	79 51 15	3182	78 1	
31	Regulus W.	92 27 46	2712	94 4 10	2694	95 40 58	2677	97	
	Mars W.	41 54 14	2786	43 29 0	2768	45 4 10	2750	46	
	Spica ♀ W.	38 24 50	2712	40 1 14	2695	41 38 1	2676	43	
	Venus E.	30 5 18	3233	28 39 48	3225	27 14 9	3218	25	
	SUN E.	71 7 1	3077	69 38 23	3059	68 9 23	3039		

CONFIGURATIONS OF THE SATELLITES OF JUPITER,
At 5^h, MEAN TIME.

Day of the Month.	West.	East.
1	4	○ ·1 3· 2
2	4 3· 1·	○ 2·
3	3 2· 4	○ ·1
4	3 1	○ 4 ●
5	3 ●	○ 1· 2· 4
6		○ 3 4
7	2	○ 1· 3· 4
8	1 ●	○ 3 4
9	3 1·	○ 2· 4
10	3· 2·	○ ·1 4
11	3 1· 2	○ 4
12		3 ○ 4· 1· 2·
13	4· 1· 2·	○ ·3
14	4· 2	○ 1· 3
15	4	1 ○ 2 3
16	4 3·	○ 2· ○
17	4 3· 2·	○ ·1
18	4 3 1· 2	○
19	4 3	○ 1· 2
20		1 4 ○ 3 ○
21	2	○ 1· 3· ●
22		1 ○ 2 3· 4
23	1· ○ 3· ○	○ 2· 4
24	1 ● 3· 2·	○ 4
25	3 2 1·	○ 4
26	3	○ 1· 2 4
27		1 ○ 2· 3 4
28	2	○ 1· 4· 3
29	2 ● 1 4	○ 3
30	4 3	1 ○ 2
31	4 3· 2·	○ ●

This Table represents, at 5^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0'.418488. Days.	From Mean Noon of January 1.	
	Logarithm of						Day of the Year.	Fraction of the Year.
	A	B	C	D				
1	-0.5470	+1.3022	-9.1993	-0.8722	5 17 47.57	284	0	.000
2	0.5855	1.3007	9.1887	0.8729	5 13 51.66	285	1	.003
3	0.6208	1.2990	9.1778	0.8736	5 9 55.75	286	2	.005
4	-0.6532	+1.2972	-9.1667	-0.8743	5 5 59.84	287	3	.008
5	0.6833	1.2952	9.1553	0.8751	5 2 3.92	288	4	.011
6	0.7114	1.2930	9.1437	0.8759	4 58 8.01	289	5	.014
7	-0.7375	+1.2908	-9.1318	-0.8768	4 54 12.10	290	6	.016
8	0.7621	1.2883	9.1197	0.8776	4 50 16.18	291	7	.019
9	0.7852	1.2857	9.1072	0.8786	4 46 20.27	292	8	.022
10	-0.8070	+1.2830	-9.0945	-0.8795	4 42 24.36	293	9	.025
11	0.8277	1.2801	9.0815	0.8804	4 38 28.45	294	10	.027
12	0.8472	1.2771	9.0681	0.8814	4 34 32.54	295	11	.030
13	-0.8658	+1.2738	-9.0544	-0.8824	4 30 36.63	296	12	.033
14	0.8835	1.2705	9.0403	0.8835	4 26 40.71	297	13	.036
15	0.9004	1.2669	9.0259	0.8845	4 22 44.80	298	14	.038
16	-0.9165	+1.2632	-9.0110	-0.8856	4 18 48.89	299	15	.041
17	0.9318	1.2594	8.9957	0.8867	4 14 52.97	300	16	.044
18	0.9466	1.2553	8.9800	0.8878	4 10 57.06	301	17	.047
19	-0.9607	+1.2511	-8.9639	-0.8890	4 7 1.15	302	18	.049
20	0.9742	1.2467	8.9472	0.8902	4 3 5.24	303	19	.052
21	0.9872	1.2421	8.9301	0.8913	3 59 9.33	304	20	.055
22	-0.9996	+1.2374	-8.9124	-0.8925	3 55 13.42	305	21	.058
23	1.0116	1.2324	8.8940	0.8937	3 51 17.50	306	22	.060
24	1.0232	1.2273	8.8750	0.8949	3 47 21.59	307	23	.063
25	-1.0342	+1.2219	-8.8553	-0.8961	3 43 25.68	308	24	.066
26	1.0449	1.2164	8.8348	0.8974	3 39 29.77	309	25	.068
27	1.0552	1.2106	8.8136	0.8986	3 35 33.86	310	26	.071
28	-1.0651	+1.2046	-8.7916	-0.8999	3 31 37.95	311	27	.074
29	1.0747	1.1984	8.7685	0.9011	3 27 42.04	312	28	.077
30	1.0839	1.1920	8.7444	0.9024	3 23 46.13	313	29	.079
31	1.0928	1.1853	8.7191	0.9036	3 19 50.22	314	30	.081
32	-1.1014	+1.1784	-8.6925	-0.9048	3 15 54.30	315		

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		h m s	s	° ' "	"	m s	m s	s
Frid.	1	20 57 24.99	10.189	S. 17 14 24.3	42.74	1 8.32	13 49.21	0.335
Sat.	2	21 1 29.53	10.155	16 57 18.5	43.48	1 8.20	13 57.17	0.299
Sun.	3	21 5 33.27	10.121	16 39 54.8	44.21	1 8.08	14 4.32	0.265
Mon.	4	21 9 36.18	10.087	16 22 13.7	44.92	1 7.97	14 10.67	0.231
Tues.	5	21 13 38.29	10.053	16 4 15.5	45.62	1 7.85	14 16.21	0.196
Wed.	6	21 17 39.57	10.020	15 46 0.7	46.29	1 7.74	14 20.92	0.162
Thur.	7	21 21 40.04	9.986	15 27 29.7	46.95	1 7.62	14 24.82	0.128
Frid.	8	21 25 39.70	9.953	15 8 43.0	47.58	1 7.51	14 27.91	0.094
Sat.	9	21 29 38.54	9.919	14 49 41.0	48.20	1 7.40	14 30.20	0.060
Sun.	10	21 33 36.59	9.885	14 30 24.1	48.80	1 7.28	14 31.68	0.026
Mon.	11	21 37 33.82	9.852	14 10 52.8	49.39	1 7.17	14 32.36	0.000
Tues.	12	21 41 30.27	9.819	13 51 7.5	49.95	1 7.06	14 32.25	0.030
Wed.	13	21 45 25.93	9.787	13 31 8.7	50.50	1 6.95	14 31.36	0.070
Thur.	14	21 49 20.81	9.755	13 10 56.7	51.03	1 6.85	14 29.69	0.100
Frid.	15	21 53 14.93	9.724	12 50 32.0	51.54	1 6.74	14 27.26	0.130
Sat.	16	21 57 8.30	9.693	12 29 55.0	52.03	1 6.64	14 24.08	0.160
Sun.	17	22 1 0.92	9.663	12 9 6.2	52.51	1 6.54	14 20.15	0.190
Mon.	18	22 4 52.82	9.634	11 48 5.9	52.97	1 6.43	14 15.51	0.220
Tues.	19	22 8 44.02	9.605	11 26 54.6	53.42	1 6.33	14 10.17	0.250
Wed.	20	22 12 34.53	9.577	11 5 32.6	53.85	1 6.24	14 4.15	0.270
Thur.	21	22 16 24.37	9.550	10 44 0.3	54.26	1 6.15	13 57.46	0.300
Frid.	22	22 20 13.56	9.524	10 22 18.1	54.65	1 6.05	13 50.11	0.330
Sat.	23	22 24 2.12	9.498	10 0 26.3	55.03	1 5.96	13 42.13	0.350
Sun.	24	22 27 50.06	9.473	9 38 25.5	55.40	1 5.87	13 33.54	0.380
Mon.	25	22 31 37.41	9.449	9 16 15.8	55.75	1 5.78	13 24.37	0.400
Tues.	26	22 35 24.19	9.426	8 53 57.8	56.08	1 5.70	13 14.61	0.430
Wed.	27	22 39 10.41	9.403	8 31 31.8	56.40	1 5.61	13 4.31	0.450
Thur.	28	22 42 56.08	9.382	8 8 58.2	56.70	1 5.53	12 53.46	0.470
Frid.	29	22 46 41.24	9.361	7 46 17.4	56.99	1 5.45	12 42.10	0.490
Sat.	30	22 50 25.90		S. 7 23 29.7		1 5.38	12 30.23	

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
		h m s	° ' "	' "	m s	h m s
Frid.	1	20 57 22.64	S. 17 14 34.2	16 15.9	13 49.13	20 43 33.51
Sat.	2	21 1 27.17	16 57 28.6	16 15.7	13 57.10	20 47 30.07
Sun.	3	21 5 30.89	16 40 5.2	16 15.6	14 4.26	20 51 26.63
Mon.	4	21 9 33.80	16 22 24.3	16 15.4	14 10.62	20 55 23.18
Tues.	5	21 13 35.90	16 4 26.4	16 15.3	14 16.16	20 59 19.74
Wed.	6	21 17 37.18	15 46 11.8	16 15.1	14 20.88	21 3 16.30
Thur.	7	21 21 37.64	15 27 41.0	16 15.0	14 24.79	21 7 12.85
Frid.	8	21 25 37.30	15 8 54.5	16 14.8	14 27.89	21 11 9.41
Sat.	9	21 29 36.15	14 49 52.6	16 14.6	14 30.19	21 15 5.96
Sun.	10	21 33 34.19	14 30 35.9	16 14.4	14 31.67	21 19 2.52
Mon.	11	21 37 31.43	14 11 4.8	16 14.2	14 32.36	21 22 59.07
Tues.	12	21 41 27.89	13 51 19.6	16 14.0	14 32.26	21 26 55.63
Wed.	13	21 45 23.56	13 31 20.9	16 13.8	14 31.38	21 30 52.18
Thur.	14	21 49 18.45	13 11 9.0	16 13.6	14 29.71	21 34 48.74
Frid.	15	21 53 12.59	12 50 44.4	16 13.4	14 27.29	21 38 45.30
Sat.	16	21 57 5.97	12 30 7.5	16 13.2	14 24.12	21 42 41.85
Sun.	17	22 0 58.61	12 9 18.7	16 13.0	14 20.20	21 46 38.41
Mon.	18	22 4 50.53	11 48 18.5	16 12.8	14 15.57	21 50 34.96
Tues.	19	22 8 41.75	11 27 7.2	16 12.6	14 10.23	21 54 31.52
Wed.	20	22 12 32.29	11 5 45.2	16 12.4	14 4.22	21 58 28.07
Thur.	21	22 16 22.15	10 44 12.9	16 12.2	13 57.53	22 2 24.62
Frid.	22	22 20 11.36	10 22 30.7	16 12.0	13 50.18	22 6 21.18
Sat.	23	22 23 59.94	10 0 38.9	16 11.8	13 42.21	22 10 17.73
Sun.	24	22 27 47.92	9 38 38.0	16 11.5	13 33.63	22 14 14.29
Mon.	25	22 31 35.30	9 16 28.3	16 11.3	13 24.46	22 18 10.84
Tues.	26	22 35 22.11	8 54 10.2	16 11.0	13 14.71	22 22 7.40
Wed.	27	22 39 8.36	8 31 44.1	16 10.8	13 4.41	22 26 3.95
Thur.	28	22 42 54.07	8 9 10.4	16 10.5	12 53.56	22 30 0.51
Frid.	29	22 46 39.26	7 46 29.4	16 10.3	12 42.20	22 33 57.1
Sat.	30	22 50 23.95	S. 7 23 41.6	16 10.0	12 30.34	22 37

* The Semidiameter for *Apparent Noon* may be assumed the same as that for

MEAN TIME.								
Day of the Month.	THE SUN'S <i>Apparent</i>			Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.		Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.		Noon.	Noon.	Noon.	Midnight.	Noon.	Midnight.
1	311	52 43' 2"	S. 0' 48"	9'9937018	15 31' 3"	15 38' 9"	56 57' 8"	57 25' 4"
2	312	53 35' 9"	0' 57"	9'9937710	15 46' 6"	15 54' 4"	57 53' 8"	58 22' 4"
3	313	54 27' 7"	0' 64"	9'9938418	16 2' 1"	16 9' 4"	58 50' 6"	59 17' 6"
4	314	55 18' 4"	0' 67"	9'9939139	16 16' 4"	16 22' 6"	59 43' 0"	60 5' 9"
5	315	56 8' 0"	0' 68"	9'9939871	16 28' 0"	16 32' 4"	60 25' 7"	60 41' 8"
6	316	56 56' 4"	0' 65"	9'9940615	16 35' 6"	16 37' 6"	60 53' 7"	61 1' 1"
7	317	57 43' 6"	0' 59"	9'9941372	16 38' 4"	16 37' 9"	61 3' 9"	61 2' 1"
8	318	58 29' 3"	0' 51"	9'9942141	16 36' 2"	16 33' 4"	60 55' 8"	60 45' 4"
9	319	59 13' 6"	0' 41"	9'9942923	16 29' 5"	16 24' 8"	60 31' 2"	60 14' 0"
10	320	59 56' 4"	0' 29"	9'9943718	16 19' 4"	16 13' 4"	59 54' 1"	59 32' 3"
11	322	0 37' 5"	0' 16"	9'9944525	16 7' 2"	16 0' 7"	59 9' 3"	58 45' 5"
12	323	1 17' 0"	S. 0' 03"	9'9945347	15 54' 1"	15 47' 6"	58 21' 3"	57 57' 4"
13	324	1 54' 8"	N. 0' 09"	9'9946185	15 41' 2"	15 35' 0"	57 34' 0"	57 11' 4"
14	325	2 30' 9"	0' 21"	9'9947038	15 29' 2"	15 23' 7"	56 49' 9"	56 29' 6"
15	326	3 5' 2"	0' 30"	9'9947908	15 18' 5"	15 13' 7"	56 10' 6"	55 53' 0"
16	327	3 37' 7"	0' 37"	9'9948796	15 9' 2"	15 5' 2"	55 36' 7"	55 21' 7"
17	328	4 8' 3"	0' 42"	9'9949704	15 1' 5"	14 58' 1"	55 8' 1"	54 55' 7"
18	329	4 37' 2"	0' 43"	9'9950631	14 55' 1"	14 52' 4"	54 44' 7"	54 34' 8"
19	330	5 4' 4"	0' 41"	9'9951577	14 50' 0"	14 48' 0"	54 26' 1"	54 18' 6"
20	331	5 29' 9"	0' 37"	9'9952543	14 46' 2"	14 44' 8"	54 12' 1"	54 6' 9"
21	332	5 53' 7"	0' 29"	9'9953528	14 43' 7"	14 42' 9"	54 2' 9"	54 0' 1"
22	333	6 15' 9"	0' 19"	9'9954532	14 42' 5"	14 42' 5"	53 58' 7"	53 58' 6"
23	334	6 36' 5"	N. 0' 08"	9'9955557	14 42' 9"	14 43' 7"	54 0' 0"	54 3' 1"
24	335	6 55' 6"	S. 0' 05"	9'9956600	14 45' 0"	14 46' 8"	54 7' 8"	54 14' 3"
25	336	7 13' 2"	0' 19"	9'9957659	14 49' 1"	14 51' 9"	54 22' 7"	54 33' 1"
26	337	7 29' 2"	0' 32"	9'9958734	14 55' 3"	14 59' 3"	54 45' 5"	55 0' 2"
27	338	7 43' 8"	0' 45"	9'9959823	15 3' 9"	15 9' 0"	55 17' 0"	55 36' 0"
28	339	7 56' 8"	0' 56"	9'9960925	15 14' 8"	15 21' 1"	55 57' 1"	56 20' 2"
29	340	8 8' 4"	0' 66"	9'9962038	15 27' 9"	15 35' 1"	56 45' 2"	57 11' 7"
30	341	8 18' 5"	S. 0' 73"	9'9963161	15 42' 7"	15 50' 5"	57 39' 6"	58 8' 3"

MEAN TIME.

		THE MOON'S					
Day of the Week.	Day of the Month.	Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
		° ' "	° ' "	° ' "	° ' "	d	h m
Frid.	1	246 44 58.7	253 20 13.3	S. 3 10 37.2	S. 3 36 21.3	24.5	20 19.2
Sat.	2	260 2 39.5	266 52 30.5	3 59 34.3	4 19 47.5	25.5	21 19.2
Sun.	3	273 49 48.4	280 54 24.2	4 36 32.7	4 49 21.7	26.5	22 21.9
Mon.	4	288 5 55.7	295 23 47.7	4 57 49.9	5 1 35.8	27.5	23 24.5
Tues.	5	302 47 11.7	310 15 7.7	5 0 23.9	4 54 4.6	28.5	0
Wed.	6	317 46 26.2	325 19 51.2	4 42 37.4	4 26 9.9	0.1	0 24.7
Thur.	7	332 54 3.5	340 27 44.3	4 4 59.0	3 39 29.4	1.1	1 21.3
Frid.	8	347 59 39.7	355 28 43.3	3 10 13.3	2 37 48.4	2.1	2 14.3
Sat.	9	2 53 57.9	10 14 38.0	2 2 55.9	1 26 18.7	3.1	3 5.0
Sun.	10	17 30 9.6	24 40 10.5	S. 0 48 39.8	S. 0 10 40.8	4.1	3 54.5
Mon.	11	31 44 28.5	38 43 1.3	N. 0 27 0.2	N. 1 3 47.1	5.1	4 44.2
Tues.	12	45 35 53.5	52 23 16.5	1 39 8.9	2 12 37.6	6.1	5 35.2
Wed.	13	59 5 25.3	65 42 38.5	2 43 50.3	3 12 26.0	7.1	6 27.9
Thur.	14	72 15 16.7	78 43 40.5	3 38 9.1	4 0 45.5	8.1	7 22.4
Frid.	15	85 8 10.9	91 29 8.3	4 20 5.2	4 36 0.0	9.1	8 17.8
Sat.	16	97 46 51.1	104 1 37.0	4 48 24.2	4 57 14.7	10.1	9 12.6
Sun.	17	110 13 41.3	116 23 18.0	5 2 30.3	5 4 11.9	11.1	10 5.3
Mon.	18	122 30 38.9	128 35 54.4	5 2 22.0	4 57 5.8	12.1	10 55.1
Tues.	19	134 39 14.5	140 40 48.6	4 48 29.3	4 36 40.9	13.1	11 41.5
Wed.	20	146 40 45.0	152 39 13.0	4 21 50.6	4 4 9.6	14.1	12 24.8
Thur.	21	158 36 22.5	164 32 24.6	3 43 50.4	3 21 6.8	15.1	13 5.7
Frid.	22	170 27 32.1	176 21 59.6	2 56 14.0	2 29 27.3	16.1	13 45.1
Sat.	23	182 16 4.3	188 10 5.6	2 1 2.9	1 31 18.1	17.1	14 23.9
Sun.	24	194 4 25.5	199 59 29.0	N. 1 0 30.0	N. 0 28 56.3	18.1	15 3.3
Mon.	25	205 55 43.2	211 53 38.2	S. 0 3 5.5	S. 0 35 15.8	19.1	15 44.2
Tues.	26	217 53 46.3	223 56 41.4	1 7 16.7	1 38 48.4	20.1	16 27.9
Wed.	27	230 2 59.1	236 13 16.2	2 9 31.3	2 39 4.2	21.1	17 15.3
Thur.	28	242 28 9.1	248 48 14.3	3 7 5.9	3 33 14.1	22.1	18 7.1
Frid.	29	255 14 5.5	261 46 14.4	3 57 5.2	4 18 15.1	23.1	19 3.4
Sat.	30	268 25 7.7	275 11 6.6	S. 4 36 19.4	S. 4 50 53.2	24.1	20 3.1

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>FRIDAY 1.</i>				<i>SUNDAY 3.</i>			
0	16 17 15 ^s 35	S. 24 35 9 ^o 9	77 ^o 75	0	18 17 18 ^s 05	S. 28 0 42 ^o 8	0 ^o 89
1	16 19 35 ^s 12	24 42 56 ^o 4	76 ^o 50	1	18 19 56 ^s 70	28 0 48 ^o 2	1 ^o 01
2	16 21 55 ^s 37	24 50 35 ^o 4	75 ^o 23	2	18 22 35 ^s 57	28 0 42 ^o 1	2 ^o 92
3	16 24 16 ^s 11	24 58 6 ^o 7	73 ^o 95	3	18 25 14 ^s 64	28 0 24 ^o 6	4 ^o 84
4	16 26 37 ^s 32	25 5 30 ^o 4	72 ^o 65	4	18 27 53 ^s 92	27 59 55 ^o 5	6 ^o 77
5	16 28 59 ^s 02	25 12 46 ^o 4	71 ^o 34	5	18 30 33 ^s 39	27 59 14 ^o 9	8 ^o 70
6	16 31 21 ^s 20	25 19 54 ^o 4	70 ^o 01	6	18 33 13 ^s 03	27 58 22 ^o 7	10 ^o 64
7	16 33 43 ^s 86	25 26 54 ^o 5	68 ^o 67	7	18 35 52 ^s 84	27 57 18 ^o 9	12 ^o 58
8	16 36 6 ^s 99	25 33 46 ^o 5	67 ^o 31	8	18 38 32 ^s 81	27 56 3 ^o 4	14 ^o 53
9	16 38 30 ^s 60	25 40 30 ^o 3	65 ^o 93	9	18 41 12 ^s 93	27 54 36 ^o 2	16 ^o 49
10	16 40 54 ^s 68	25 47 5 ^o 9	64 ^o 54	10	18 43 53 ^s 18	27 52 57 ^o 3	18 ^o 44
11	16 43 19 ^s 23	25 53 33 ^o 1	63 ^o 13	11	18 46 33 ^s 56	27 51 6 ^o 6	20 ^o 41
12	16 45 44 ^s 24	25 59 51 ^o 9	61 ^o 71	12	18 49 14 ^s 05	27 49 4 ^o 2	22 ^o 37
13	16 48 9 ^s 72	26 6 2 ^o 1	60 ^o 27	13	18 51 54 ^s 65	27 46 50 ^o 0	24 ^o 34
14	16 50 35 ^s 67	26 12 3 ^o 7	58 ^o 81	14	18 54 35 ^s 35	27 44 23 ^o 9	26 ^o 31
15	16 53 2 ^s 08	26 17 56 ^o 6	57 ^o 34	15	18 57 16 ^s 13	27 41 46 ^o 0	28 ^o 29
16	16 55 28 ^s 94	26 23 40 ^o 6	55 ^o 85	16	18 59 56 ^s 97	27 38 56 ^o 3	30 ^o 26
17	16 57 56 ^s 25	26 29 15 ^o 7	54 ^o 35	17	19 2 37 ^s 88	27 35 54 ^o 7	32 ^o 24
18	17 0 24 ^s 01	26 34 41 ^o 8	52 ^o 83	18	19 5 18 ^s 84	27 32 41 ^o 3	34 ^o 22
19	17 2 52 ^s 22	26 39 58 ^o 8	51 ^o 29	19	19 7 59 ^s 84	27 29 16 ^o 0	36 ^o 19
20	17 5 20 ^s 86	26 45 6 ^o 5	49 ^o 75	20	19 10 40 ^s 87	27 25 38 ^o 8	38 ^o 17
21	17 7 49 ^s 94	26 50 5 ^o 0	48 ^o 18	21	19 13 21 ^s 92	27 21 49 ^o 8	40 ^o 15
22	17 10 19 ^s 46	26 54 54 ^o 1	46 ^o 60	22	19 16 2 ^s 97	27 17 48 ^o 9	42 ^o 12
23	17 12 49 ^s 40	S. 26 59 33 ^o 7	45 ^o 01	23	19 18 44 ^s 02	S. 27 13 36 ^o 2	44 ^o 10
<i>SATURDAY 2.</i>				<i>MONDAY 4.</i>			
0	17 15 19 ^s 76	S. 27 4 3 ^o 8	43 ^o 40	0	19 21 25 ^s 05	S. 27 9 11 ^o 6	46 ^o 07
1	17 17 50 ^s 54	27 8 24 ^o 2	41 ^o 78	1	19 24 6 ^s 06	27 4 35 ^o 2	48 ^o 04
2	17 20 21 ^s 73	27 12 34 ^o 9	40 ^o 14	2	19 26 47 ^s 04	26 59 46 ^o 9	50 ^o 01
3	17 22 53 ^s 33	27 16 35 ^o 7	38 ^o 49	3	19 29 27 ^s 97	26 54 46 ^o 9	51 ^o 97
4	17 25 25 ^s 33	27 20 26 ^o 6	36 ^o 82	4	19 32 8 ^s 84	26 49 35 ^o 1	53 ^o 93
5	17 27 57 ^s 72	27 24 7 ^o 5	35 ^o 14	5	19 34 49 ^s 65	26 44 11 ^o 5	55 ^o 88
6	17 30 30 ^s 49	27 27 38 ^o 4	33 ^o 45	6	19 37 30 ^s 38	26 38 36 ^o 2	57 ^o 83
7	17 33 3 ^s 64	27 30 59 ^o 1	31 ^o 74	7	19 40 11 ^s 02	26 32 49 ^o 3	59 ^o 77
8	17 35 37 ^s 17	27 34 9 ^o 5	30 ^o 02	8	19 42 51 ^s 57	26 26 50 ^o 6	61 ^o 71
9	17 38 11 ^s 06	27 37 9 ^o 6	28 ^o 28	9	19 45 32 ^s 01	26 20 40 ^o 4	63 ^o 64
10	17 40 45 ^s 31	27 39 59 ^o 3	26 ^o 54	10	19 48 12 ^s 33	26 14 18 ^o 5	65 ^o 57
11	17 43 19 ^s 91	27 42 38 ^o 5	24 ^o 78	11	19 50 52 ^s 53	26 7 45 ^o 1	67 ^o 49
12	17 45 54 ^s 86	27 45 7 ^o 2	23 ^o 01	12	19 53 32 ^s 60	26 1 0 ^o 2	69 ^o 40
13	17 48 30 ^s 15	27 47 25 ^o 3	21 ^o 22	13	19 56 12 ^s 52	25 54 3 ^o 8	71 ^o 30
14	17 51 5 ^s 76	27 49 32 ^o 6	19 ^o 43	14	19 58 52 ^s 29	25 46 56 ^o 0	73 ^o 19
15	17 53 41 ^s 69	27 51 29 ^o 2	17 ^o 62	15	20 1 31 ^s 89	25 39 36 ^o 9	75 ^o 07
16	17 56 17 ^s 94	27 53 14 ^o 9	15 ^o 80	16	20 4 11 ^s 32	25 32 6 ^o 5	76 ^o 95
17	17 58 54 ^s 49	27 54 49 ^o 7	13 ^o 97	17	20 6 50 ^s 57	25 24 24 ^o 8	78 ^o 81
18	18 1 31 ^s 33	27 56 13 ^o 6	12 ^o 13	18	20 9 29 ^s 63	25 16 31 ^o 9	80 ^o 67
19	18 4 8 ^s 45	27 57 26 ^o 4	10 ^o 28	19	20 12 8 ^s 50	25 8 27 ^o 9	82 ^o 51
20	18 6 45 ^s 85	27 58 28 ^o 1	8 ^o 43	20	20 14 47 ^s 17	25 0 12 ^o 8	84 ^o 34
21	18 9 23 ^s 52	27 59 18 ^o 6	6 ^o 56	21	20 17 25 ^s 62	24 51 46 ^o 8	86 ^o 16
22	18 12 1 ^s 45	27 59 58 ^o 0	4 ^o 68	22	20 20 3 ^s 85	24 43 9 ^o 8	87 ^o 97
23	18 14 39 ^s 63	28 0 26 ^o 0	2 ^o 79	23	20 22 41 ^s 86	24 34 21 ^o 9	89 ^o 77
24	18 17 18 ^s 05	S. 28 0 42 ^o 8		24	20 25 19 ^s 63	S. 24 25 23 ^o 3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
TUESDAY 5.				THURSDAY 7.			
	h m s	° ' "	"		h m s	° ' "	"
0	20 25 19.63	S. 24 25 23.3	91.56	0	22 25 29.17	S. 14 15 11.9	156.64
1	20 27 57.16	24 16 13.9	93.33	1	22 27 51.07	13 59 32.1	157.49
2	20 30 34.44	24 6 54.0	95.09	2	22 30 12.64	13 43 47.1	158.33
3	20 33 11.46	23 57 23.5	96.83	3	22 32 33.88	13 27 57.1	159.14
4	20 35 48.23	23 47 42.5	98.56	4	22 34 54.80	13 12 2.3	159.93
5	20 38 24.73	23 37 51.1	100.27	5	22 37 15.40	12 56 2.8	160.70
6	20 41 0.95	23 27 49.5	101.97	6	22 39 35.68	12 39 58.6	161.44
7	20 43 36.89	23 17 37.7	103.66	7	22 41 55.65	12 23 49.9	162.17
8	20 46 12.55	23 7 15.7	105.33	8	22 44 15.31	12 7 36.9	162.87
9	20 48 47.92	22 56 43.8	106.98	9	22 46 34.66	11 51 19.7	163.56
10	20 51 23.00	22 46 1.9	108.62	10	22 48 53.71	11 34 58.4	164.22
11	20 53 57.77	22 35 10.2	110.24	11	22 51 12.45	11 18 33.1	164.86
12	20 56 32.24	22 24 8.8	111.84	12	22 53 30.90	11 2 3.9	165.47
13	20 59 6.40	22 12 57.8	113.42	13	22 55 49.06	10 45 31.1	166.07
14	21 1 40.24	22 1 37.2	114.99	14	22 58 6.93	10 28 54.7	166.64
15	21 4 13.77	21 50 7.3	116.54	15	23 0 24.51	10 12 14.8	167.20
16	21 6 46.98	21 38 28.0	118.08	16	23 2 41.81	9 55 31.6	167.73
17	21 9 19.86	21 26 39.5	119.59	17	23 4 58.84	9 38 45.2	168.24
18	21 11 52.42	21 14 42.0	121.09	18	23 7 15.59	9 21 55.8	168.73
19	21 14 24.65	21 2 35.4	122.57	19	23 9 32.07	9 5 3.4	169.20
20	21 16 56.54	20 50 20.0	124.03	20	23 11 48.29	8 48 8.2	169.65
21	21 19 28.10	20 37 55.8	125.47	21	23 14 4.25	8 31 10.3	170.08
22	21 21 59.32	20 25 23.0	126.89	22	23 16 19.95	8 14 9.8	170.48
23	21 24 30.20	S. 20 12 41.7	128.30	23	23 18 35.40	S. 7 57 6.9	170.87
WEDNESDAY 6.				FRIDAY 8.			
0	21 27 0.73	S. 19 59 51.9	129.68	0	23 20 50.60	S. 7 40 1.7	171.24
1	21 29 30.92	19 46 53.8	131.04	1	23 23 5.56	7 22 54.3	171.58
2	21 32 0.76	19 33 47.6	132.38	2	23 25 20.29	7 5 44.8	171.90
3	21 34 30.26	19 20 33.3	133.71	3	23 27 34.78	6 48 33.4	172.21
4	21 36 59.41	19 7 11.1	135.01	4	23 29 49.05	6 31 20.1	172.49
5	21 39 28.21	18 53 41.0	136.29	5	23 32 3.09	6 14 5.2	172.76
6	21 41 56.66	18 40 3.3	137.55	6	23 34 16.91	5 56 48.6	173.00
7	21 44 24.76	18 26 18.0	138.79	7	23 36 30.52	5 39 30.6	173.22
8	21 46 52.51	18 12 25.2	140.01	8	23 38 43.92	5 22 11.3	173.43
9	21 49 19.90	17 58 25.1	141.21	9	23 40 57.11	5 4 50.7	173.61
10	21 51 46.95	17 44 17.9	142.39	10	23 43 10.10	4 47 29.0	173.78
11	21 54 13.64	17 30 3.5	143.55	11	23 45 22.90	4 30 6.3	173.92
12	21 56 39.99	17 15 42.2	144.68	12	23 47 35.51	4 12 42.8	174.05
13	21 59 5.99	17 1 14.1	145.80	13	23 49 47.94	3 55 18.5	174.15
14	22 1 31.63	16 46 39.3	146.89	14	23 52 0.19	3 37 53.6	174.24
15	22 3 56.93	16 31 58.0	147.96	15	23 54 12.26	3 20 28.1	174.31
16	22 6 21.88	16 17 10.2	149.01	16	23 56 24.17	3 3 2.3	174.36
17	22 8 46.49	16 2 16.1	150.04	17	23 58 35.91	2 45 36.1	174.39
18	22 11 10.75	15 47 15.8	151.05	18	0 0 47.50	2 28 9.8	174.40
19	22 13 34.67	15 32 9.5	152.04	19	0 2 58.93	2 10 43.3	174.40
20	22 15 58.25	15 16 57.3	153.00	20	0 5 10.21	1 53 16.9	174.40
21	22 18 21.49	15 1 39.3	153.94	21	0 7 21.35	1 35 50.7	174.40
22	22 20 44.38	14 46 15.7	154.86	22	0 9 32.35	1 18 24.7	174.40
23	22 23 6.94	14 30 46.5	155.76	23	0 11 43.22	1 0 59.1	174.40
24	22 25 29.17	S. 14 15 11.9		24	0 13 53.96	S. 0 43 33	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. for
<i>SATURDAY 9.</i>				<i>MONDAY 11.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	0 13 53.96	S. 0 43 33.9	174.10	0	1 57 39.37	N. 12 30 42.6	135
1	0 16 4.58	0 26 9.3	173.98	1	1 59 49.96	12 45 45.9	145
2	0 18 15.08	S. 0 8 45.4	173.85	2	2 2 0.66	13 0 44.1	143
3	0 20 25.47	N. 0 8 37.7	173.70	3	2 4 11.46	13 15 37.2	147
4	0 22 35.76	0 25 59.9	173.53	4	2 6 22.38	13 30 25.1	147
5	0 24 45.94	0 43 21.1	173.35	5	2 8 33.42	13 45 7.7	146
6	0 26 56.03	1 0 41.2	173.15	6	2 10 44.58	13 59 45.0	145
7	0 29 6.03	1 18 0.1	172.93	7	2 12 55.86	14 14 16.9	144
8	0 31 15.94	1 35 17.7	172.69	8	2 15 7.27	14 28 43.2	142
9	0 33 25.77	1 52 33.8	172.44	9	2 17 18.82	14 43 4.0	142
10	0 35 35.52	2 9 48.4	172.17	10	2 19 30.49	14 57 19.2	141
11	0 37 45.21	2 27 1.4	171.88	11	2 21 42.30	15 11 28.6	140
12	0 39 54.83	2 44 12.7	171.57	12	2 23 54.25	15 25 32.3	139
13	0 42 4.39	3 1 22.1	171.25	13	2 26 6.34	15 39 30.1	139
14	0 44 13.90	3 18 29.6	170.92	14	2 28 18.58	15 53 22.0	137
15	0 46 23.36	3 35 35.1	170.56	15	2 30 30.96	16 7 7.9	137
16	0 48 32.77	3 52 38.5	170.19	16	2 32 43.50	16 20 47.7	135
17	0 50 42.15	4 9 39.7	169.81	17	2 34 56.19	16 34 21.4	135
18	0 52 51.49	4 26 38.5	169.41	18	2 37 9.03	16 47 48.9	133
19	0 55 0.80	4 43 35.0	168.99	19	2 39 22.03	17 1 10.2	133
20	0 57 10.08	5 0 28.9	168.56	20	2 41 35.19	17 14 25.1	131
21	0 59 19.35	5 17 20.3	168.11	21	2 43 48.51	17 27 33.6	131
22	1 1 28.60	5 34 9.0	167.65	22	2 46 1.99	17 40 35.6	129
23	1 3 37.84	N. 5 50 54.9	167.17	23	2 48 15.64	N. 17 53 31.0	127
<i>SUNDAY 10.</i>				<i>TUESDAY 12.</i>			
0	1 5 47.07	N. 6 7 37.9	166.68	0	2 50 29.45	N. 18 6 19.9	125
1	1 7 56.31	6 24 18.0	166.17	1	2 52 43.44	18 19 2.1	125
2	1 10 5.55	6 40 55.0	165.65	2	2 54 57.59	18 31 37.6	123
3	1 12 14.80	6 57 28.9	165.11	3	2 57 11.92	18 44 6.3	123
4	1 14 24.07	7 13 59.6	164.56	4	2 59 26.42	18 56 28.1	121
5	1 16 33.36	7 30 26.9	163.99	5	3 1 41.10	19 8 43.0	121
6	1 18 42.67	7 46 50.8	163.41	6	3 3 55.95	19 20 50.9	120
7	1 20 52.01	8 3 11.3	162.81	7	3 6 10.98	19 32 51.8	118
8	1 23 1.38	8 19 28.1	162.20	8	3 8 26.19	19 44 45.5	118
9	1 25 10.79	8 35 41.3	161.58	9	3 10 41.57	19 56 32.1	116
10	1 27 20.24	8 51 50.8	160.94	10	3 12 57.13	20 8 11.5	116
11	1 29 29.74	9 7 56.4	160.28	11	3 15 12.88	20 19 43.6	114
12	1 31 39.29	9 23 58.1	159.62	12	3 17 28.81	20 31 8.4	114
13	1 33 48.89	9 39 55.8	158.93	13	3 19 44.92	20 42 25.8	112
14	1 35 58.56	9 55 49.4	158.24	14	3 22 1.21	20 53 35.7	110
15	1 38 8.29	10 11 38.8	157.53	15	3 24 17.68	21 4 38.1	109
16	1 40 18.08	10 27 24.0	156.81	16	3 26 34.33	21 15 33.0	107
17	1 42 27.95	10 43 4.9	156.07	17	3 28 51.17	21 26 20.2	106
18	1 44 37.89	10 58 41.3	155.32	18	3 31 8.18	21 36 59.7	105
19	1 46 47.91	11 14 13.2	154.56	19	3 33 25.38	21 47 31.5	104
20	1 48 58.02	11 29 40.6	153.78	20	3 35 42.76	21 57 55.5	102
21	1 51 8.21	11 45 3.2	152.99	21	3 38 0.31	22 8 11.7	101
22	1 53 18.50	12 0 21.2	152.19	22	3 40 18.05	22 18 20.0	100
23	1 55 28.89	12 15 34.3	151.37	23	3 42 35.97	22 28 20.3	98
24	1 57 39.37	N. 12 30 42.6		24	3 44 54.06	N. 22 38 12.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>WEDNESDAY 13.</i>				<i>FRIDAY 15.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	3 44 54.06	N.22 38 12.6	97.37	0	5 38 4.95	N.27 42 9.6	26.03
1	3 47 12.33	22 47 56.8	96.02	1	5 40 28.25	27 44 45.8	24.47
2	3 49 30.78	22 57 33.0	94.67	2	5 42 51.55	27 47 12.6	22.91
3	3 51 49.40	23 7 1.0	93.30	3	5 45 14.83	27 49 30.0	21.35
4	3 54 8.20	23 16 20.8	91.93	4	5 47 38.09	27 51 38.1	19.79
5	3 56 27.17	23 25 32.4	90.54	5	5 50 1.32	27 53 36.9	18.23
6	3 58 46.31	23 34 35.6	89.16	6	5 52 24.52	27 55 26.2	16.67
7	4 1 5.61	23 43 30.6	87.76	7	5 54 47.69	27 57 6.2	15.11
8	4 3 25.09	23 52 17.1	86.36	8	5 57 10.81	27 58 36.9	13.56
9	4 5 44.73	24 0 55.2	84.95	9	5 59 33.88	27 59 58.2	12.00
10	4 8 4.53	24 9 24.9	83.53	10	6 1 56.89	28 1 10.2	10.45
11	4 10 24.49	24 17 46.1	82.10	11	6 4 19.84	28 2 12.9	8.90
12	4 12 44.61	24 25 58.7	80.68	12	6 6 42.73	28 3 6.3	7.35
13	4 15 4.89	24 34 2.8	79.24	13	6 9 5.54	28 3 50.4	5.80
14	4 17 25.32	24 41 58.2	77.79	14	6 11 28.27	28 4 25.2	4.26
15	4 19 45.90	24 49 44.9	76.34	15	6 13 50.92	28 4 50.7	2.72
16	4 22 6.63	24 57 23.0	74.89	16	6 16 13.47	28 5 7.1	1.18
17	4 24 27.50	25 4 52.3	73.42	17	6 18 35.93	28 5 14.1	0.35
18	4 26 48.52	25 12 12.8	71.95	18	6 20 58.28	28 5 12.0	1.88
19	4 29 9.67	25 19 24.5	70.48	19	6 23 20.53	28 5 0.7	3.41
20	4 31 30.95	25 26 27.4	69.00	20	6 25 42.66	28 4 40.2	4.94
21	4 33 52.37	25 33 21.4	67.51	21	6 28 4.67	28 4 10.6	6.45
22	4 36 13.92	25 40 6.5	66.02	22	6 30 26.55	28 3 31.9	7.97
23	4 38 35.59	N.25 46 42.6	64.53	23	6 32 48.30	N.28 2 44.1	9.48
<i>THURSDAY 14.</i>				<i>SATURDAY 16.</i>			
0	4 40 57.37	N.25 53 9.8	63.02	0	6 35 9.91	N.28 1 47.2	10.99
1	4 43 19.28	25 59 27.9	61.52	1	6 37 31.38	28 0 41.3	12.49
2	4 45 41.30	26 5 37.1	60.01	2	6 39 52.70	27 59 26.4	13.98
3	4 48 3.42	26 11 37.1	58.49	3	6 42 13.87	27 58 2.5	15.48
4	4 50 25.65	26 17 28.1	56.98	4	6 44 34.88	27 56 29.6	16.96
5	4 52 47.98	26 23 9.9	55.45	5	6 46 55.72	27 54 47.8	18.44
6	4 55 10.41	26 28 42.7	53.93	6	6 49 16.39	27 52 57.2	19.92
7	4 57 32.93	26 34 6.2	52.40	7	6 51 36.88	27 50 57.7	21.39
8	4 59 55.53	26 39 20.6	50.87	8	6 53 57.19	27 48 49.3	22.85
9	5 2 18.22	26 44 25.8	49.33	9	6 56 17.32	27 46 32.2	24.31
10	5 4 40.98	26 49 21.8	47.79	10	6 58 37.25	27 44 6.4	25.76
11	5 7 3.82	26 54 8.5	46.25	11	7 0 56.99	27 41 31.8	27.20
12	5 9 26.73	26 58 46.0	44.70	12	7 3 16.52	27 38 48.6	28.64
13	5 11 49.70	27 3 14.2	43.16	13	7 5 35.85	27 35 56.7	30.08
14	5 14 12.72	27 7 33.2	41.61	14	7 7 54.97	27 32 56.3	31.50
15	5 16 35.80	27 11 42.8	40.06	15	7 10 13.87	27 29 47.3	32.92
16	5 18 58.92	27 15 43.1	38.50	16	7 12 32.55	27 26 29.8	34.33
17	5 21 22.09	27 19 34.2	36.95	17	7 14 51.00	27 23 3.8	35.73
18	5 23 45.29	27 23 15.8	35.39	18	7 17 9.23	27 19 29.4	37.13
19	5 26 8.52	27 26 48.2	33.83	19	7 19 27.22	27 15 46.7	38.51
20	5 28 31.78	27 30 11.2	32.27	20	7 21 44.97	27 11 55.6	39.89
21	5 30 55.06	27 33 24.8	30.71	21	7 24 2.48	27 7 56.2	41.27
22	5 33 18.35	27 36 29.1	29.15	22	7 26 19.74	27 3 48.6	42.63
23	5 35 41.65	27 39 24.0	27.59	23	7 28 36.75	26 59 32.8	43.99
24	5 38 4.95	N.27 42 9.6		24	7 30 53.51	N.26 55 8.9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>SUNDAY 17.</i>				<i>TUESDAY 19.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	7 30 53.51	N.26 55 8.9	45.33	0	9 14 30.07	N.21 2 41.5	98.80
1	7 33 10.01	26 50 36.9	46.67	1	9 16 31.87	20 52 48.7	99.66
2	7 35 26.25	26 45 56.9	48.00	2	9 18 33.36	20 42 50.7	100.52
3	7 37 42.23	26 41 8.8	49.33	3	9 20 34.54	20 32 47.6	101.36
4	7 39 57.93	26 36 12.9	50.64	4	9 22 35.41	20 22 39.5	102.19
5	7 42 13.36	26 31 9.1	51.94	5	9 24 35.98	20 12 26.3	103.01
6	7 44 28.52	26 25 57.4	53.24	6	9 26 36.23	20 2 8.2	103.83
7	7 46 43.41	26 20 37.9	54.53	7	9 28 36.18	19 51 45.3	104.63
8	7 48 58.01	26 15 10.8	55.81	8	9 30 35.83	19 41 17.5	105.42
9	7 51 12.32	26 9 35.9	57.08	9	9 32 35.17	19 30 45.0	106.20
10	7 53 26.35	26 3 53.5	58.34	10	9 34 34.21	19 20 7.8	106.97
11	7 55 40.09	25 58 3.5	59.59	11	9 36 32.96	19 9 26.0	107.73
12	7 57 53.53	25 52 6.0	60.83	12	9 38 31.41	18 58 39.6	108.48
13	8 0 6.68	25 46 1.0	62.06	13	9 40 29.56	18 47 48.7	109.22
14	8 2 19.53	25 39 48.7	63.28	14	9 42 27.42	18 36 53.4	109.95
15	8 4 32.09	25 33 29.0	64.49	15	9 44 24.99	18 25 53.6	110.68
16	8 6 44.34	25 27 2.0	65.69	16	9 46 22.27	18 14 49.6	111.39
17	8 8 56.29	25 20 27.9	66.89	17	9 48 19.27	18 3 41.3	112.09
18	8 11 7.93	25 13 46.6	68.07	18	9 50 15.98	17 52 28.7	112.78
19	8 13 19.27	25 6 58.1	69.24	19	9 52 12.40	17 41 12.1	113.46
20	8 15 30.30	25 0 2.7	70.40	20	9 54 8.55	17 29 51.3	114.13
21	8 17 41.01	24 53 0.3	71.56	21	9 56 4.42	17 18 26.5	114.79
22	8 19 51.42	24 45 50.9	72.70	22	9 58 0.02	17 6 57.8	115.44
23	8 22 1.51	N.24 38 34.7	73.83	23	9 59 55.35	N.16 55 25.1	116.09
<i>MONDAY 18.</i>				<i>WEDNESDAY 20.</i>			
0	8 24 11.29	N.24 31 11.7	74.95	0	10 1 50.40	N.16 43 48.6	116.72
1	8 26 20.75	24 23 42.0	76.06	1	10 3 45.19	16 32 8.3	117.34
2	8 28 29.89	24 16 5.6	77.17	2	10 5 39.72	16 20 24.2	117.96
3	8 30 38.72	24 8 22.6	78.26	3	10 7 33.98	16 8 36.5	118.56
4	8 32 47.22	24 0 33.0	79.34	4	10 9 27.99	15 56 45.2	119.15
5	8 34 55.41	23 52 37.0	80.41	5	10 11 21.74	15 44 50.2	119.74
6	8 37 3.28	23 44 34.5	81.47	6	10 13 15.24	15 32 51.8	120.31
7	8 39 10.82	23 36 25.7	82.52	7	10 15 8.48	15 20 49.9	120.88
8	8 41 18.05	23 28 10.6	83.56	8	10 17 1.48	15 8 44.6	121.44
9	8 43 24.96	23 19 49.2	84.59	9	10 18 54.23	14 56 36.0	121.99
10	8 45 31.54	23 11 21.6	85.61	10	10 20 46.75	14 44 24.1	122.53
11	8 47 37.81	23 2 47.9	86.62	11	10 22 39.02	14 32 8.9	123.05
12	8 49 43.75	22 54 8.2	87.62	12	10 24 31.05	14 19 50.6	123.57
13	8 51 49.37	22 45 22.5	88.61	13	10 26 22.86	14 7 29.1	124.09
14	8 53 54.66	22 36 30.8	89.59	14	10 28 14.43	13 55 4.6	124.59
15	8 55 59.64	22 27 33.2	90.56	15	10 30 5.78	13 42 37.1	125.08
16	8 58 4.29	22 18 29.9	91.52	16	10 31 56.91	13 30 6.6	125.57
17	9 0 8.63	22 9 20.8	92.46	17	10 33 47.81	13 17 33.2	126.04
18	9 2 12.64	22 0 6.0	93.40	18	10 35 38.50	13 4 56.9	126.51
19	9 4 16.34	21 50 45.6	94.33	19	10 37 28.98	12 52 17.9	126.97
20	9 6 19.72	21 41 19.6	95.24	20	10 39 19.24	12 39 36.1	127.42
21	9 8 22.78	21 31 48.2	96.15	21	10 41 9.30	12 26 51.6	127.86
22	9 10 25.53	21 22 11.3	97.04	22	10 42 59.15	12 14 4.5	128.29
23	9 12 27.96	21 12 29.0	97.93	23	10 44 48.80	12 1 14.8	128.71
24	9 14 30.07	N.21 2 41.5		24	10 46 38.26	N.11 48 22.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^s .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^s .
<i>THURSDAY 21.</i>				<i>SATURDAY 23.</i>			
0	10 46 38.26	N. 11 48 22.5	129.12	0	12 11 31.97	N. 0 56 53.8	139.58
1	10 48 27.53	11 35 27.8	129.53	1	12 13 16.31	0 42 56.3	139.61
2	10 50 16.60	11 22 30.6	129.93	2	12 15 0.64	0 28 58.7	139.64
3	10 52 5.49	11 9 31.0	130.31	3	12 16 44.96	0 15 0.8	139.66
4	10 53 54.20	10 56 29.2	130.69	4	12 18 29.29	N. 0 1 2.9	139.67
5	10 55 42.72	10 43 25.0	131.06	5	12 20 13.63	S. 0 12 55.1	139.67
6	10 57 31.07	10 30 18.6	131.43	6	12 21 57.97	0 26 53.2	139.67
7	10 59 19.25	10 17 10.0	131.78	7	12 23 42.33	0 40 51.2	139.66
8	11 1 7.26	10 3 59.4	132.13	8	12 25 26.70	0 54 49.1	139.65
9	11 2 55.10	9 50 46.6	132.47	9	12 27 11.10	1 8 47.0	139.62
10	11 4 42.78	9 37 31.8	132.80	10	12 28 55.52	1 22 44.7	139.59
11	11 6 30.30	9 24 15.0	133.12	11	12 30 39.97	1 36 42.3	139.55
12	11 8 17.67	9 10 56.3	133.43	12	12 32 24.46	1 50 39.6	139.51
13	11 10 4.89	8 57 35.7	133.74	13	12 34 8.99	2 4 36.7	139.46
14	11 11 51.96	8 44 13.3	134.03	14	12 35 53.55	2 18 33.4	139.40
15	11 13 38.89	8 30 49.1	134.32	15	12 37 38.16	2 32 29.8	139.33
16	11 15 25.68	8 17 23.2	134.60	16	12 39 22.83	2 46 25.7	139.26
17	11 17 12.33	8 3 55.6	134.88	17	12 41 7.55	3 0 21.3	139.17
18	11 18 58.85	7 50 26.3	135.14	18	12 42 52.33	3 14 16.3	139.09
19	11 20 45.24	7 36 55.4	135.40	19	12 44 37.17	3 28 10.8	138.99
20	11 22 31.51	7 23 23.0	135.65	20	12 46 22.08	3 42 4.8	138.89
21	11 24 17.66	7 9 49.1	135.89	21	12 48 7.07	3 55 58.1	138.78
22	11 26 3.69	6 56 13.8	136.13	22	12 49 52.13	4 9 50.7	138.66
23	11 27 49.60	N. 6 42 37.0	136.35	23	12 51 37.27	S. 4 23 42.7	138.53
<i>FRIDAY 22.</i>				<i>SUNDAY 24.</i>			
0	11 29 35.41	N. 6 28 58.9	136.57	0	12 53 22.49	S. 4 37 33.9	138.40
1	11 31 21.11	6 15 19.5	136.78	1	12 55 7.80	4 51 24.3	138.26
2	11 33 6.71	6 1 38.8	136.99	2	12 56 53.21	5 5 13.8	138.11
3	11 34 52.21	5 47 56.8	137.18	3	12 58 38.72	5 19 2.5	137.96
4	11 36 37.61	5 34 13.7	137.37	4	13 0 24.32	5 32 50.2	137.80
5	11 38 22.93	5 20 29.5	137.55	5	13 2 10.03	5 46 37.0	137.63
6	11 40 8.16	5 6 44.2	137.73	6	13 3 55.86	6 0 22.8	137.45
7	11 41 53.30	4 52 57.8	137.89	7	13 5 41.80	6 14 7.5	137.27
8	11 43 38.37	4 39 10.5	138.05	8	13 7 27.85	6 27 51.1	137.08
9	11 45 23.36	4 25 22.2	138.20	9	13 9 14.03	6 41 33.6	136.88
10	11 47 8.28	4 11 33.0	138.34	10	13 11 0.33	6 55 14.9	136.67
11	11 48 53.14	3 57 42.9	138.48	11	13 12 46.76	7 8 54.9	136.46
12	11 50 37.93	3 43 52.0	138.61	12	13 14 33.33	7 22 33.7	136.25
13	11 52 22.66	3 30 0.3	138.73	13	13 16 20.04	7 36 11.2	136.02
14	11 54 7.34	3 16 8.0	138.85	14	13 18 6.89	7 49 47.3	135.78
15	11 55 51.97	3 2 14.9	138.95	15	13 19 53.89	8 3 22.0	135.54
16	11 57 36.55	2 48 21.2	139.05	16	13 21 41.04	8 16 55.2	135.29
17	11 59 21.09	2 34 26.9	139.14	17	13 23 28.35	8 30 26.9	135.03
18	12 1 5.59	2 20 32.0	139.23	18	13 25 15.82	8 43 57.1	134.76
19	12 2 50.05	2 6 36.7	139.30	19	13 27 3.46	8 57 25.7	134.48
20	12 4 34.48	1 52 40.8	139.37	20	13 28 51.27	9 10 52.6	134.1
21	12 6 18.88	1 38 44.6	139.44	21	13 30 39.25	9 24 17.8	133.7
22	12 8 3.26	1 24 48.0	139.49	22	13 32 27.41	9 37 41.2	133.3
23	12 9 47.62	1 10 51.0	139.54	23	13 34 15.75	9 51 2.9	133.0
24	12 11 31.97	N. 0 56 53.8		24	13 36 4.29	S. 10 4 22.7	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>MONDAY 25.</i>				<i>WEDNESDAY 27.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	
1	13 36 4.29	S. 10 4 22.7	132.98	1	15 7 56.34	S. 19 50 54.5	
2	13 37 53.01	10 17 40.6	132.66	2	15 9 59.10	20 1 37.4	
3	13 39 41.93	10 30 56.5	132.32	3	15 12 2.25	20 12 15.5	
4	13 41 31.05	10 44 10.5	131.98	4	15 14 5.79	20 22 48.9	
5	13 43 20.38	10 57 22.4	131.63	5	15 16 9.71	20 33 17.3	
6	13 45 9.91	11 10 32.2	131.28	6	15 18 14.03	20 43 40.8	
7	13 46 59.66	11 23 39.8	130.91	7	15 20 18.74	20 53 59.2	
8	13 48 49.62	11 36 45.3	130.54	8	15 22 23.85	21 4 12.5	
9	13 50 39.81	11 49 48.5	130.16	9	15 24 29.36	21 14 20.6	
10	13 52 30.22	12 2 49.5	129.77	10	15 26 35.27	21 24 23.5	
11	13 54 20.86	12 15 48.1	129.37	11	15 28 41.59	21 34 21.1	
12	13 56 11.74	12 28 44.3	128.96	12	15 30 48.32	21 44 13.2	
13	13 58 2.85	12 41 38.1	128.55	13	15 32 55.45	21 53 59.9	
14	13 59 54.21	12 54 29.4	128.13	14	15 35 3.00	22 3 41.0	
15	14 1 45.81	13 7 18.2	127.69	15	15 37 10.96	22 13 16.5	
16	14 3 37.66	13 20 4.3	127.25	16	15 39 19.34	22 22 46.3	
17	14 5 29.77	13 32 47.8	126.80	17	15 41 28.14	22 32 10.3	
18	14 7 22.14	13 45 28.6	126.34	18	15 43 37.36	22 41 28.5	
19	14 9 14.77	13 58 6.7	125.87	19	15 45 47.00	22 50 40.7	
20	14 11 7.67	14 10 41.9	125.39	20	15 47 57.07	22 59 46.8	
21	14 13 0.84	14 23 14.3	124.90	21	15 50 7.56	23 8 46.9	
22	14 14 54.29	14 35 43.7	124.41	22	15 52 18.47	23 17 40.9	
23	14 16 48.02	14 48 10.1	123.90	23	15 54 29.82	23 26 28.5	
24	14 18 42.04	S. 15 0 33.5	123.38	24	15 56 41.59	S. 23 35 9.9	
<i>TUESDAY 26.</i>				<i>THURSDAY 28.</i>			
0	14 20 36.34	S. 15 12 53.8	122.85	0	15 58 53.79	S. 23 43 44.8	
1	14 22 30.94	15 25 10.9	122.32	1	16 1 6.43	23 52 13.2	
2	14 24 25.83	15 37 24.8	121.77	2	16 3 19.50	24 0 35.1	
3	14 26 21.02	15 49 35.5	121.22	3	16 5 33.01	24 8 50.3	
4	14 28 16.52	16 1 42.8	120.65	4	16 7 46.95	24 16 58.8	
5	14 30 12.33	16 13 46.7	120.08	5	16 10 1.32	24 25 0.5	
6	14 32 8.45	16 25 47.1	119.49	6	16 12 16.12	24 32 55.2	
7	14 34 4.88	16 37 44.1	118.90	7	16 14 31.36	24 40 43.0	
8	14 36 1.64	16 49 37.4	118.29	8	16 16 47.04	24 48 23.7	
9	14 37 58.72	17 1 27.2	117.68	9	16 19 3.15	24 55 57.3	
10	14 39 56.13	17 13 13.2	117.05	10	16 21 19.69	25 3 23.6	
11	14 41 53.87	17 24 55.5	116.41	11	16 23 36.67	25 10 42.7	
12	14 43 51.94	17 36 34.0	115.77	12	16 25 54.07	25 17 54.3	
13	14 45 50.35	17 48 8.6	115.11	13	16 28 11.91	25 24 58.5	
14	14 47 49.11	17 59 39.3	114.44	14	16 30 30.18	25 31 55.1	
15	14 49 48.22	18 11 5.9	113.76	15	16 32 48.88	25 38 44.0	
16	14 51 47.67	18 22 28.5	113.07	16	16 35 8.02	25 45 25.3	
17	14 53 47.48	18 33 46.9	112.37	17	16 37 27.58	25 51 58.7	
18	14 55 47.65	18 45 1.2	111.66	18	16 39 47.56	25 58 24.2	
19	14 57 48.17	18 56 11.1	110.94	19	16 42 7.97	26 4 41.8	
20	14 59 49.06	19 7 16.8	110.20	20	16 44 28.81	26 10 51.3	
21	15 1 50.32	19 18 18.0	109.46	21	16 46 50.06	26 16 52.7	
22	15 3 51.95	19 29 14.7	108.70	22	16 49 11.74	26 22 45.8	
23	15 5 53.96	19 40 6.9	107.93	23	16 51 33.83	26 28 30.6	
24	15 7 56.34	S. 19 50 54.5		24	16 53 56.33	S. 26 34 7.1	

MEAN TIME.			
THE MOON'S RIGHT ASCENSION AND DECLINATION.			
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
FRIDAY 29.			
0	16 53 56.33	S. 26 34 7.1	54.67
1	16 56 19.25	26 39 35.1	53.24
2	16 58 42.58	26 44 54.5	51.80
3	17 1 6.31	26 50 5.3	50.35
4	17 3 30.45	26 55 7.4	48.88
5	17 5 54.99	27 0 0.7	47.41
6	17 8 19.93	27 4 45.2	45.91
7	17 10 45.25	27 9 20.7	44.41
8	17 13 10.96	27 13 47.1	42.89
9	17 15 37.06	27 18 4.5	41.36
10	17 18 3.54	27 22 12.7	39.82
11	17 20 30.39	27 26 11.6	38.27
12	17 22 57.61	27 30 1.2	36.70
13	17 25 25.20	27 33 41.4	35.12
14	17 27 53.16	27 37 12.1	33.53
15	17 30 21.47	27 40 33.3	31.92
16	17 32 50.13	27 43 44.8	30.30
17	17 35 19.13	27 46 46.6	28.67
18	17 37 48.48	27 49 38.6	27.03
19	17 40 18.16	27 52 20.8	25.38
20	17 42 48.17	27 54 53.1	23.72
21	17 45 18.50	27 57 15.5	22.05
22	17 47 49.14	27 59 27.7	20.36
23	17 50 20.09	S. 28 1 29.9	18.67
SATURDAY, MAR. 1.			
0	17 52 51.35	S. 28 3 21.9	

PHASES OF THE MOON.			
	d	h	m
● New Moon - -	5	22	35.5
) First Quarter - -	12	14	11.6
○ Full Moon - -	20	9	40.4
(Last Quarter - -	28	13	41.5

	d	h
(Perigee - - - - -	7	1
(Apogee - - - - -	22	7

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
1	Mars W.	48 15 43	2713	49 52 6	2693	51 28 56	2674	53 6 11	2655
	Spica ♀ W.	44 52 50	2639	46 30 52	2621	48 9 19	2602	49 48 12	2581
	SUN E.	65 10 11	3001	63 40 0	2982	62 9 25	2962	60 38 25	2943
2	Mars W.	61 19 0	2556	62 58 55	2537	64 39 16	2517	66 20 5	2498
	Spica ♀ W.	58 9 7	2487	59 50 38	2468	61 32 36	2450	63 15 0	2430
	Antares W.	12 16 25	2504	13 57 33	2480	15 39 14	2458	17 21 27	2437
	SUN E.	52 57 15	2845	51 23 46	2826	49 49 52	2807	48 15 33	2788
3	Mars W.	74 50 55	2403	76 34 26	2384	78 18 24	2366	80 2 47	2348
	Spica ♀ W.	71 53 44	2337	73 38 49	2319	75 24 20	2302	77 10 16	2284
	Antares W.	25 59 46	2338	27 44 50	2320	29 30 20	2302	31 16 17	2284
	SUN E.	40 17 50	2698	38 41 7	2681	37 4 1	2666	35 26 35	2650
8	SUN W.	29 10 38	2398	30 54 16	2399	32 37 52	2402	34 21 24	2406
	α Arietis E.	49 14 26	2135	47 24 20	2147	45 34 33	2162	43 45 8	2178
	Aldebaran E.	79 32 21	2087	77 41 2	2095	75 49 55	2103	73 59 0	2112
9	SUN W.	42 57 6	2442	44 39 41	2453	46 22 1	2463	48 4 7	2473
	α Arietis E.	34 44 53	2287	32 58 34	2317	31 12 59	2350	29 28 13	2389
	Aldebaran E.	64 48 9	2166	62 58 50	2180	61 9 52	2193	59 21 14	2208
	SUN E.	80 20 24	2114	78 29 47	2125	76 39 26	2137	74 49 23	2149
10	Pollux E.	108 26 38	2104	106 35 45	2115	104 45 9	2127	102 54 51	2138
	SUN W.	56 30 27	2538	58 10 48	2551	59 50 50	2566	61 30 32	2580
	α Pegasi W.	32 34 19	3617	33 52 35	3502	35 12 57	3405	36 35 8	3323
	Aldebaran E.	50 23 48	2291	48 37 35	2309	46 51 49	2329	45 6 32	2350
11	SUN W.	65 43 59	2216	63 55 56	2231	62 8 15	2245	60 20 55	2261
	Pollux E.	93 47 57	2202	91 59 33	2217	90 11 30	2231	88 23 48	2245
	α Pegasi W.	69 43 53	2657	71 21 30	2673	72 58 46	2689	74 35 40	2705
	Aldebaran E.	43 45 31	3069	45 14 18	3039	46 43 42	3015	48 13 36	2995
12	SUN W.	36 28 10	2472	34 46 18	2502	33 5 7	2534	31 24 41	2569
	SUN E.	51 30 3	2341	49 45 3	2358	48 0 28	2375	46 16 18	2392
	Pollux E.	79 30 39	2319	77 45 7	2334	75 59 57	2349	74 15 9	2364
	Regulus E.	116 5 10	2329	114 19 53	2344	112 34 57	2359	110 50 23	2374
13	SUN W.	82 34 48	2787	84 9 33	2803	85 43 57	2818	87 18 1	2835
	α Pegasi W.	55 48 1	2941	57 19 28	2937	58 51 0	2935	60 22 34	2935
	Aldebaran E.	23 16 20	2818	21 42 15	2895	20 9 50	2988	18 39 22	3103
	SUN E.	37 41 47	2484	36 0 12	2504	34 19 4	2524	32 38 24	2545
14	Pollux E.	65 36 38	2441	63 54 1	2456	62 11 46	2471	60 29 52	2486
	Regulus E.	102 12 57	2449	100 30 32	2464	98 48 28	2479	97 6 45	2494
	SUN W.	95 3 10	2913	96 35 12	2929	98 6 54	2944	99 38 17	2958
	α Pegasi W.	68 0 4	2949	69 31 20	2955	71 2 29	2962	72 33 29	2969
15	α Arietis W.	24 22 43	2883	25 55 24	2860	27 28 34	2844	29 2 5	2832
	Pollux E.	52 5 34	2559	50 25 43	2574	48 46 12	2588	47 7 1	2602
	Regulus E.	88 43 20	2567	87 3 40	2580	85 24 18	2595	83 45 16	2609
	SUN W.	107 10 37	3031	108 40 12	3044	110 9 30	3058	111 38 31	3071
16	α Pegasi W.	80 6 10	3011	81 36 9	3020	83 5 57	3030	84 35 32	3041
	α Arietis W.	36 52 7	2816	38 26 14	2818	40 0 18	2821	41 34 19	2825
	Pollux E.	38 55 42	2669	37 18 21	2681	35 41 16	2695	34 4 29	2707

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .			P.L. of diff.			
		°	'	"	°	'	"	°	'	"	°	'	"				
1	Mars W.	54	43	51	2635	56	21	59	2616	58	0	32	2596	59	39	33	2577
	Spica ♀ W.	51	27	30	2564	53	7	15	2545	54	47	26	2526	56	28	3	2507
	SUN E.	59	7	1	2923	57	35	12	2904	56	2	58	2884	54	30	19	2865
2	Mars W.	68	1	21	2479	69	43	4	2460	71	25	14	2441	73	7	51	2422
	Spica ♀ W.	64	57	52	2412	66	41	10	2393	68	24	55	2375	70	9	6	2356
	Antares W.	19	4	9	2416	20	47	21	2396	22	31	2	2377	24	15	10	2357
3	SUN E.	46	40	49	2769	45	5	40	2750	43	30	7	2732	41	54	10	2715
	Mars W.	81	47	37	2330	83	32	52	2313	85	18	33	2296	87	4	38	2280
	Spica ♀ W.	78	56	39	2268	80	43	26	2251	82	30	30	2235	84	18	14	2219
8	Antares W.	33	2	40	2266	34	49	29	2250	36	36	42	2233	38	24	21	2217
	SUN E.	33	48	48	2635	32	10	41	2622	30	32	16	2611	28	53	36	2600
	SUN W.	36	4	50	2411	37	48	9	2417	39	31	19	2425	41	14	18	2433
9	α Arietis E.	41	56	7	2195	40	7	32	2214	38	19	26	2236	36	31	52	2260
	Aldebaran E.	72	8	19	2121	70	17	52	2131	68	27	40	2143	66	37	46	2154
	Saturn E.	87	45	30	2075	85	53	52	2084	84	2	28	2093	82	11	18	2103
10	SUN W.	49	45	58	2485	51	27	32	2498	53	8	48	2510	54	49	47	2524
	α Arietis E.	27	44	23	2435	26	1	38	2487	24	20	7	2549	22	40	2	2624
	Aldebaran E.	57	32	58	2223	55	45	4	2239	53	57	34	2255	52	10	28	2273
11	Saturn E.	72	59	39	2162	71	10	14	2175	69	21	9	2188	67	32	24	2202
	Pollux E.	101	4	50	2151	99	15	8	2163	97	25	45	2176	95	36	41	2189
	SUN W.	63	9	54	2596	64	48	55	2611	66	27	35	2626	68	5	55	2642
12	α Pegasi W.	37	58	53	3254	39	23	58	3195	40	50	13	3146	42	17	27	3105
	Aldebaran E.	43	21	46	2372	41	37	31	2395	39	53	49	2419	38	10	41	2445
	Saturn E.	58	33	58	2277	56	47	24	2293	55	1	14	2308	53	15	26	2325
13	Pollux E.	86	36	27	2259	84	49	27	2274	83	2	49	2289	81	16	33	2304
	SUN W.	76	12	13	2722	77	48	23	2738	79	24	13	2754	80	59	41	2770
	α Pegasi W.	49	43	55	2978	51	14	35	2965	52	45	32	2954	54	16	42	2947
14	Aldebaran E.	29	45	3	2607	28	6	18	2649	26	28	30	2698	24	51	48	2754
	Saturn E.	44	32	32	2410	42	49	12	2429	41	6	18	2446	39	23	49	2465
	Pollux E.	72	30	43	2380	70	46	39	2395	69	2	57	2410	67	19	36	2426
15	Regulus E.	109	6	11	2389	107	22	20	2404	105	38	51	2419	103	55	43	2434
	SUN W.	88	51	43	2851	90	25	5	2866	91	58	7	2883	93	20	48	2898
	α Pegasi W.	61	54	9	2935	63	25	43	2938	64	57	14	2941				944
16	Aldebaran E.	17	11	16	3248	15	46	4	3438	14	24	31	360				46
	Saturn E.	30	58	14	2567	29	18	33	2590	27	39	25	26				
	Pollux E.	58	48	19	2501	57	7	7	2516	55	26	16					
17	Regulus E.	95	25	23	2509	93	44	22	2523	92	3	41					
	SUN W.	101	9	22	2974	102	40	8	2989	104	10	35					
	α Pegasi W.	74	4	21	2976	75	35	4	2984	77	5	37					
18	α Arietis W.	30	35	51	2824	32	9	48	2818	33	43	5					
	Pollux E.	45	28	8	2615	43	49	34	2629	42	11						
	Regulus E.	82	6	33	2622	80	28	8	2636	78	50						
19	SUN W.	113	7	16	3084	114	35	45	3097	116	3						
	α Pegasi W.	86	4	54	3051	87	34	4	3062	89	3						
	α Arietis W.	43	8	14	2830	44	42	3	2835	46	15						
20	Pollux E.	32	27	58	2720	30	51	44	2732	29	1						

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
14	Regulus E.	75	34	43	2675	73	57	29	2688	72	20	33	2701	70	43	54	2711
15	SUN W.	118	59	38	3134	120	27	6	3147	121	54	19	3158	123	21	18	3170
	α Pegasi W.	92	0	11	3096	93	28	26	3108	94	56	26	3119	96	24	12	3130
	α Arietis W.	49	22	48	2852	50	56	8	2859	52	29	19	2866	54	2	21	2873
	Aldebaran W.	19	55	16	3213	21	21	10	3163	22	48	3	3125	24	15	42	3094
	Pollux E.	26	4	39	2768	24	29	29	2779	22	54	34	2791	21	19	55	2804
	Regulus E.	62	44	36	2771	61	9	30	2782	59	34	39	2792	58	0	1	2804
	Mars E.	115	42	55	2796	114	8	22	2807	112	34	3	2817	110	59	57	2827
16	α Arietis W.	61	45	20	2907	63	17	30	2915	64	49	30	2921	66	21	22	2921
	Aldebaran W.	31	40	42	3022	33	10	27	3016	34	40	20	3012	36	10	18	3009
	Saturn W.	15	45	56	3076	17	14	35	3045	18	43	52	3024	20	13	35	3009
	Regulus E.	50	10	20	2855	48	37	3	2864	47	3	58	2874	45	31	6	2883
	Mars E.	103	12	31	2872	101	39	36	2880	100	6	52	2888	98	34	18	2897
	Spica ♀ E.	104	10	18	2841	102	36	44	2850	101	3	21	2859	99	30	9	2867
17	α Arietis W.	73	58	32	2962	75	29	33	2968	77	0	26	2974	78	31	11	2980
	Aldebaran W.	43	40	33	3009	45	10	35	3011	46	40	34	3012	48	10	32	3015
	Saturn W.	27	45	23	2981	29	15	59	2981	30	46	36	2981	32	17	12	2983
	Regulus E.	37	49	43	2929	36	18	1	2939	34	46	32	2948	33	15	14	2957
	Mars E.	90	53	58	2934	89	22	22	2940	87	50	54	2947	86	19	35	2951
	Spica ♀ E.	91	46	47	2906	90	14	36	2913	88	42	34	2920	87	10	41	2927
18	α Arietis W.	86	3	4	3010	87	33	5	3016	89	2	58	3021	90	32	45	3026
	Aldebaran W.	55	39	27	3030	57	9	3	3033	58	38	35	3037	60	8	2	3040
	Saturn W.	39	49	34	2996	41	19	52	2999	42	50	6	3002	44	20	16	3006
	Mars E.	78	44	53	2983	77	14	19	2989	75	43	52	2993	74	13	31	2998
	Spica ♀ E.	79	33	22	2958	78	2	17	2965	76	31	20	2971	75	0	31	2976
19	α Arietis W.	97	59	57	3052	99	29	5	3058	100	58	6	3063	102	27	1	3069
	Aldebaran W.	67	34	15	3057	69	3	17	3060	70	32	15	3064	72	1	8	3068
	Saturn W.	51	49	57	3024	53	19	40	3028	54	49	18	3031	56	18	53	3035
	Pollux W.	23	22	32	3007	24	52	36	3011	26	22	35	3014	27	52	30	3018
	Mars E.	66	43	18	3022	65	13	32	3026	63	43	52	3030	62	14	17	3034
	Spica ♀ E.	67	28	3	3002	65	57	52	3006	64	27	47	3010	62	57	47	3015
	Antares E.	113	20	57	2998	111	50	42	3002	110	20	32	3007	108	50	28	3012
20	Aldebaran W.	79	24	34	3084	80	53	3	3087	82	21	28	3090	83	49	50	3093
	Saturn W.	63	45	40	3051	65	14	49	3054	66	43	55	3058	68	12	56	3060
	Pollux W.	35	20	59	3035	36	50	28	3038	38	19	54	3042	39	49	15	3044
	Mars E.	54	47	33	3052	53	18	25	3056	51	49	22	3059	50	20	22	3063
	Spica ♀ E.	55	29	11	3036	53	59	43	3039	52	30	19	3043	51	1	0	3047
	Antares E.	101	21	26	3031	99	51	52	3034	98	22	22	3038	96	52	56	3042
21	Aldebaran W.	91	10	46	3107	92	38	47	3110	94	6	45	3112	95	34	40	3114
	Saturn W.	75	37	15	3073	77	5	57	3075	78	34	37	3078	80	3	14	3079
	Pollux W.	47	15	10	3057	48	44	12	3060	50	13	11	3062	51	42	7	3064
	Mars E.	42	56	19	3076	41	27	40	3079	39	59	5	3081	38	30	32	3083
	Spica ♀ E.	43	35	26	3062	42	6	30	3065	40	37	38	3069	39	8	50	3071
	Antares E.	89	26	45	3056	87	57	41	3057	86	28	39	3060	84	59	41	3061
22	Aldebaran W.	102	53	36	3124	104	21	16	3126	105	48	54	3128	107	16	29	3129
	Saturn W.	87	25	48	3087	88	54	13	3088	90	22	37	3089	91	51	0	3090

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
14	Regulus E.	69 7 30	2725	67 31 23	2737	65 55 32	2748	64 19 56	2760
15	SUN W.	124 48 3	3181	126 14 35	3193	127 40 53	3204	129 6 58	3215
	α Pegasi W.	97 51 43	3145	99 18 58	3157	100 45 58	3170	102 12 43	3184
	α Arietis W.	55 35 15	2880	57 7 59	2887	58 40 35	2894	60 13 2	2901
	Aldebaran W.	25 43 57	3073	27 12 40	3055	28 41 45	3041	30 11 7	3030
	Pollux E.	19 45 32	2816	18 11 25	2829	16 37 35	2842	15 4 2	2857
	Regulus E.	56 25 38	2815	54 51 29	2825	53 17 33	2835	51 43 50	2845
	Mars E.	109 26 4	2836	107 52 23	2845	106 18 54	2854	104 45 36	2864
16	α Arietis W.	67 53 5	2935	69 24 39	2942	70 56 5	2948	72 27 23	2955
	Aldebaran W.	37 40 19	3008	39 10 22	3007	40 40 26	3007	42 10 30	3008
	Saturn W.	21 43 37	2998	23 13 53	2991	24 44 17	2985	26 14 48	2982
	Regulus E.	43 58 25	2893	42 25 57	2902	40 53 40	2912	39 21 36	2920
	Mars E.	97 1 55	2905	95 29 42	2912	93 57 38	2920	92 25 44	2926
	Spica ♀ E.	97 57 8	2876	96 24 18	2884	94 51 38	2891	93 19 8	2898
17	α Arietis W.	80 1 49	2986	81 32 19	2993	83 2 41	2998	84 32 56	3004
	Aldebaran W.	49 40 26	3018	51 10 17	3021	52 40 4	3023	54 9 48	3027
	Saturn W.	33 47 46	2985	35 18 18	2987	36 48 47	2990	38 19 12	2993
	Regulus E.	31 44 8	2967	30 13 14	2977	28 42 33	2988	27 12 5	2999
	Mars E.	84 48 23	2959	83 17 19	2966	81 46 24	2971	80 15 35	2977
	Spica ♀ E.	85 38 57	2934	84 7 21	2940	82 35 53	2947	81 4 34	2953
18	α Arietis W.	92 2 25	3032	93 31 58	3038	95 1 24	3043	96 30 44	3048
	Aldebaran W.	61 37 25	3043	63 6 44	3047	64 35 59	3051	66 5 9	3054
	Saturn W.	45 50 21	3010	47 20 22	3014	48 50 18	3017	50 20 10	3021
	Mars E.	72 43 16	3004	71 13 8	3009	69 43 6	3013	68 13 9	3017
	Spica ♀ E.	73 29 48	2981	71 59 12	2986	70 28 42	2992	68 58 19	2997
19	α Arietis W.	103 55 49	3073	105 24 32	3078	106 53 8	3082	108 21 39	3087
	Aldebaran W.	73 29 57	3071	74 58 42	3074	76 27 23	3078	77 56 0	3080
	Saturn W.	57 48 22	3038	59 17 48	3042	60 47 9	3045	62 16 26	3048
	Pollux W.	29 22 21	3022	30 52 7	3026	32 21 48	3028	33 51 26	3032
	Mars E.	60 44 47	3038	59 15 21	3043	57 46 1	3046	56 16 45	3049
	Spica ♀ E.	61 27 53	3020	59 58 5	3024	58 28 22	3028	56 58 44	3032
	Antares E.	107 20 30	3015	105 50 36	3020	104 20 48	3024	102 51 5	3027
20	Aldebaran W.	85 18 8	3096	86 46 23	3099	88 14 34	3102	89 42 41	3104
	Saturn W.	69 41 55	3063	71 10 50	3066	72 39 41	3068	74 8 30	3071
	Pollux W.	41 18 33	3047	42 47 47	3050	44 16 58	3053	45 46 5	3055
	Mars E.	48 51 27	3065	47 22 34	3069	45 53 46	3071	44 25 1	3074
	Spica ♀ E.	49 31 45	3050	48 2 34	3054	46 33 28	3056	45 4 25	3060
	Antares E.	95 23 35	3044	93 54 17	3047	92 25 3	3050	90 55 52	3053
21	Aldebaran W.	97 2 33	3117	98 30 22	3119	99 58 9	3120	101 25 54	3123
	Saturn W.	81 31 49	3081	83 0 22	3083	84 28 52	3087	86 57 21	3086
	Pollux W.	53 11 1	3065	54 39 53	3068	56 8 42	3071	57 30	3069
	Mars E.	37 2 2	3086	35 33 35	3087	34 5 10	3089	32 30	3092
	Spica ♀ E.	37 40 5	3073	36 11 22	3076	34 42 4	3079	32 30	3081
	Antares E.	83 30 44	3064	82 1 51	3065	80 32	3067	78 30	3069
22	Aldebaran W.	108 44 3	3131	110 11 35	3133	111	3133	111	3133
	Saturn W.	93 19 22	3091	94 47 43	3091	96	3091	96	3091

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Day of the Month.	Star's Name and Position.	Noon.			III ^b .			VI ^b .			IX ^b .		
		P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.		
22	Pollux W.	59 6 17	3071	60 35 2	3072	62 3 46	3073	63 32 28					
	Regulus W.	22 44 56	3131	24 12 28	3126	25 40 6	3121	27 7 50					
	Mars E.	31 8 29	3095	29 40 13	3096	28 11 59	3099	26 43 48					
	Spica ♃ E.	31 45 34	3083	30 17 3	3085	28 48 35	3087	27 20 10					
	Antares E.	77 35 21	3070	76 6 35	3070	74 37 49	3072	73 9 5					
23	Saturn W.	99 12 45	3091	100 41 6	3091	102 9 27	3090	103 37 49					
	Pollux W.	70 55 58	3073	72 24 41	3073	73 53 24	3071	75 22 9					
	Regulus W.	34 27 37	3101	35 55 45	3098	37 23 57	3096	38 52 12					
	Antares E.	65 45 30	3072	64 16 46	3072	62 48 2	3070	61 19 16					
	α Aquilæ E.	112 37 48	4080	111 27 27	4060	110 16 46	4040	109 5 46					
24	Venus E.	114 42 0	3566	113 22 49	3565	112 3 37	3564	110 44 23					
	Saturn W.	111 0 1	3081	112 28 34	3078	113 57 10	3076	115 25 49					
	Pollux W.	82 46 22	3060	84 15 21	3057	85 44 23	3053	87 13 30					
	Regulus W.	46 14 22	3077	47 43 0	3073	49 11 42	3069	50 40 29					
	Antares E.	53 55 0	3059	52 26 0	3057	50 56 58	3053	49 27 51					
25	α Aquilæ E.	103 6 33	3945	101 53 59	3932	100 41 12	3921	99 28 14					
	Venus E.	104 7 39	3549	102 48 9	3545	101 28 35	3542	100 8 57					
	Pollux W.	94 40 12	3028	96 9 50	3022	97 39 35	3017	99 9 27					
	Regulus W.	58 5 48	3040	59 35 11	3034	61 4 41	3028	62 34 19					
	Antares E.	42 1 8	3029	40 31 31	3023	39 1 47	3017	37 31 56					
26	α Aquilæ E.	93 20 51	3865	92 6 56	3858	90 52 54	3853	89 38 46					
	Venus E.	93 29 30	3512	92 9 19	3506	90 49 1	3499	89 28 36					
	SUN E.	130 11 30	3426	128 49 43	3420	127 27 49	3413	126 5 47					
	Regulus W.	70 4 37	2985	71 35 9	2976	73 5 52	2966	74 36 47					
	Mars W.	16 46 48	3015	18 16 42	2999	19 46 56	2983	21 17 30					
27	Spica ♃ W.	16 4 48	3017	17 34 39	3002	19 4 49	2988	20 35 17					
	Antares E.	30 0 39	2977	28 29 57	2968	26 59 4	2960	25 28 1					
	Venus E.	82 44 27	3452	81 23 9	3442	80 1 40	3433	78 40 1					
	α Aquilæ E.	83 26 49	3826	82 12 14	3824	80 57 37	3823	79 42 59					
	SUN E.	119 13 21	3363	117 50 22	3353	116 27 12	3344	115 3 51					
28	Regulus W.	82 14 22	2905	83 46 34	2894	85 19 0	2883	86 51 41					
	Mars W.	28 54 45	2900	30 27 4	2887	31 59 40	2873	33 32 34					
	Spica ♃ W.	28 11 38	2911	29 43 43	2898	31 16 4	2886	32 48 41					
	Venus E.	71 48 46	3367	70 25 52	3354	69 2 43	3342	67 39 20					
	α Aquilæ E.	73 29 57	3832	72 15 28	3837	71 1 4	3844	69 46 47					
29	SUN E.	108 3 57	3276	106 39 17	3263	105 14 22	3250	103 49 12					
	Regulus W.	94 39 13	2804	96 13 36	2789	97 48 18	2775	99 23 19					
	Mars W.	41 21 39	2785	42 56 26	2770	44 31 33	2754	46 7 1					
	Spica ♃ W.	40 36 11	2802	42 10 36	2787	43 45 21	2772	45 20 26					
	Venus E.	60 38 26	3257	59 13 24	3241	57 48 4	3226	56 22 26					
30	α Aquilæ E.	63 37 50	3914	62 24 45	3932	61 11 58	3954	59 59 33					
	SUN E.	96 39 12	3163	95 12 19	3147	93 45 6	3132	92 17 35					
	Mars W.	54 9 48	2654	55 47 30	2637	57 25 35	2618	59 4 5					
	Spica ♃ W.	53 21 3	2675	54 58 16	2658	56 35 53	2641	58 13 53					
	Venus E.	49 9 24	3127	47 41 47	3110	46 13 49	3092	44 45 30					
31	α Aquilæ E.	54 4 35	4155	52 55 26	4204	51 47 4	4260	50 39 34					
	E.	84 54 47	3027	83 25 8	3009	81 55 6	2991	80 24 42					

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Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
22	Pollux W.	65 1 11	3073	66 29 53	3074	67 58 34	3074	69 27 16	3074
	Regulus W.	28 35 39	3113	30 3 33	3110	31 31 31	3107	32 59 32	3104
	Mars E.	25 15 40	3104	23 47 35	3107	22 19 34	3111	20 51 38	3115
	Spica ♀ E.	25 51 48	3092	24 23 29	3095	22 55 13	3098	21 27 1	3101
	Antares E.	71 40 21	3073	70 11 38	3073	68 42 55	3074	67 14 13	3073
23	Saturn W.	105 6 13	3088	106 34 37	3087	108 3 3	3085	109 31 31	3083
	Pollux W.	76 50 55	3068	78 19 44	3067	79 48 34	3065	81 17 27	3063
	Regulus W.	40 20 31	3090	41 48 53	3087	43 17 18	3083	44 45 48	3080
	Antares E.	59 50 29	3068	58 21 40	3066	56 52 49	3064	55 23 56	3062
	α Aquilæ E.	107 54 27	4004	106 42 51	3988	105 31 0	3973	104 18 54	3958
24	Venus E.	109 25 8	3560	108 5 50	3557	106 46 29	3555	105 27 6	3552
	Saturn W.	116 54 31	3071	118 23 16	3067	119 52 6	3064	121 21 0	3060
	Pollux W.	88 42 40	3047	90 11 55	3043	91 41 15	3038	93 10 41	3034
	Regulus W.	52 9 22	3061	53 38 19	3056	55 7 23	3051	56 36 32	3046
	Antares E.	47 58 41	3046	46 29 25	3043	45 0 5	3038	43 30 40	3033
25	α Aquilæ E.	98 15 4	3901	97 1 45	3890	95 48 15	3882	94 34 37	3874
	Venus E.	98 49 14	3533	97 29 26	3528	96 9 33	3524	94 49 35	3517
	Pollux W.	100 39 26	3005	102 9 33	2998	103 39 49	2990	105 10 14	2983
	Regulus W.	64 4 5	3015	65 33 59	3008	67 4 2	3000	68 34 15	2993
	Antares E.	36 1 57	3005	34 31 50	2999	33 1 36	2991	31 31 12	2984
26	α Aquilæ E.	88 24 32	3842	87 10 13	3836	85 55 48	3833	84 41 20	3830
	Venus E.	88 8 4	3485	86 47 23	3477	85 26 33	3470	84 5 35	3461
	SUN E.	124 43 36	3397	123 21 16	3389	121 58 47	3381	120 36 9	3372
	Regulus W.	76 7 53	2948	77 39 11	2938	79 10 41	2928	80 42 25	2917
	Mars W.	22 48 23	2955	24 19 32	2941	25 50 59	2927	27 22 44	2914
27	Spica ♀ W.	22 6 1	2962	23 37 1	2949	25 8 18	2937	26 39 50	2924
	Antares E.	23 56 47	2942	22 25 22	2933	20 53 45	2924	19 21 56	2914
	Venus E.	77 18 11	3413	75 56 9	3401	74 33 54	3391	73 11 27	3379
	α Aquilæ E.	78 28 21	3822	77 13 42	3824	75 59 5	3825	74 44 29	3829
	SUN E.	113 40 18	3322	112 16 32	3312	110 52 34	3300	109 28 22	3288
28	Regulus W.	88 24 38	2857	89 57 52	2845	91 31 21	2831	93 5 9	2818
	Mars W.	35 5 46	2845	36 39 16	2831	38 13 4	2815	39 47 12	2801
	Spica ♀ W.	34 21 36	2859	35 54 48	2845	37 28 17	2831	39 2 5	2817
	Venus E.	66 15 42	3314	64 51 47	3301	63 27 37	3287	62 3 10	3272
	α Aquilæ E.	68 32 38	3860	67 18 38	3871	66 4 49	3883	64 51 12	3898
29	SUN E.	102 23 46	3222	100 58 3	3209	99 32 4	3194	98 5 47	3178
	Regulus W.	100 58 40	2744	102 34 21	2729	104 10 22	2713	105 46 45	2697
	Mars W.	47 42 51	2722	49 19 1	2705	50 55 34	2688	52 32 30	2672
	Spica ♀ W.	46 55 51	2741	48 31 36	2725	50 7 43	2708	51 4 12	2692
	Venus E.	54 56 29	3194	53 30 13	3178	52 3 37	3161	51 11	3143
29	α Aquilæ E.	58 47 32	4006	57 35 58	4037	56 24 55		55	4111
	SUN E.	90 49 43	3098	89 21 31	3080	87 52 5			3046
	Mars W.	60 42 59	2583	62 22 18	2564	64			2526
29	Spica ♀ W.	59 52 16	2605	61 31 4	2587				551
	Venus E.	43 16 49	3057	41 47 47	3040				005
	α Aquilæ E.	49 33 3	4393	48 27 35	4472				
29	SUN E.	78 53 54	2953	77 22 42	2933				

CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 5^h 30^m, MEAN TIME.

Day of the Month.	<i>West.</i>				<i>East.</i>			
1	4	3	2	1	○			
2	4		3		○	1	2	
3	4		1		○	3		
4	4	2			○	1	3	
5		4	1		○		3	
6			4		○	1	2	
7			3	2	1	○	4	
8		3	2		○		4	
9			3		○	1	2	4
10	3			1	○	2	4	

The SATELLITES are not visible
 from the 10th day of February until the 1st day of April,
 JUPITER being too near to the SUN.

This Table represents, at 5^h 30^m after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitude) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page, the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the numeral is *on* the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0'.418488. Days.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.
	A	B	C	D				
1	-1.1014	+1.1784	-8.6925	-0.9048	3 15 54.30	315	31	.085
2	1.1097	1.1713	8.6645	0.9061	3 11 58.39	316	32	.088
3	1.1176	1.1639	8.6348	0.9073	3 8 2.48	317	33	.090
4	-1.1253	+1.1562	-8.6034	-0.9086	3 4 6.57	318	34	.093
5	1.1328	1.1483	8.5698	0.9098	3 0 10.66	319	35	.096
6	1.1400	1.1401	8.5338	0.9111	2 56 14.75	320	36	.099
7	-1.1469	+1.1316	-8.4950	-0.9123	2 52 18.84	321	37	.101
8	1.1536	1.1227	8.4529	0.9135	2 48 22.93	322	38	.104
9	1.1600	1.1136	8.4067	0.9147	2 44 27.02	323	39	.107
10	-1.1662	+1.1041	-8.3556	-0.9159	2 40 31.11	324	40	.110
11	1.1722	1.0943	8.2984	0.9171	2 36 35.20	325	41	.112
12	1.1780	1.0841	8.2335	0.9183	2 32 39.29	326	42	.115
13	-1.1835	+1.0736	-8.1578	-0.9194	2 28 43.38	327	43	.118
14	1.1889	1.0626	8.0671	0.9206	2 24 47.47	328	44	.120
15	1.1940	1.0512	7.9533	0.9217	2 20 51.57	329	45	.123
16	-1.1990	+1.0394	-7.8007	-0.9228	2 16 55.66	330	46	.126
17	1.2037	1.0272	7.5670	0.9239	2 12 59.75	331	47	.129
18	1.2083	1.0144	7.0414	0.9250	2 9 3.84	332	48	.131
19	-1.2127	+1.0011	+7.1703	-0.9260	2 5 7.93	333	49	.134
20	1.2169	0.9873	7.6053	0.9271	2 1 12.02	334	50	.137
21	1.2209	0.9729	7.8162	0.9281	1 57 16.11	335	51	.140
22	-1.2248	+0.9579	+7.9562	-0.9290	1 53 20.20	336	52	.142
23	1.2285	0.9422	8.0611	0.9300	1 49 24.29	337	53	.145
24	1.2320	0.9257	8.1449	0.9309	1 45 28.39	338	54	.148
25	-1.2354	+0.9085	+8.2146	-0.9319	1 41 32.48	339	55	.151
26	1.2386	0.8905	8.2742	0.9327	1 37 36.57	340	56	.153
27	1.2417	0.8715	8.3259	0.9336	1 33 40.66	341	57	.156
28	-1.2446	+0.8515	+8.3720	-0.9344	1 29 44.75	342	58	.159
29	1.2473	0.8305	8.4133	0.9352	1 25 48.84	343	59	.162
30	-1.2499	+0.8082	+8.4509	-0.9360	1 21 52.94	344	60	.164

AT APPARENT NOON.								
Day of the Week.	Day of the Month.	THE SUN'S				Sideral Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.	i
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Sat.	1	h m s	s	o ' "	"	m s	m s	t
Sun.	2	22 50 25.90	9.340	S. 7 23 29.7	57.25	I 5.38	12 30.23	o
Mon.	3	22 54 10.07	9.321	7 0 35.6	57.50	I 5.31	12 17.88	o
		22 57 53.77	9.302	6 37 35.4	57.74	I 5.24	12 5.07	o
Tues.	4	23 1 37.02	9.284	6 14 29.7	57.96	I 5.17	11 51.79	o
Wed.	5	23 5 19.83	9.266	5 51 18.7	58.16	I 5.11	11 38.09	o
Thur.	6	23 9 2.21	9.249	5 28 2.9	58.34	I 5.05	11 23.96	o
Frid.	7	23 12 44.18	9.233	5 4 42.8	58.50	I 4.99	11 9.42	o
Sat.	8	23 16 25.77	9.217	4 41 18.7	58.65	I 4.93	10 54.49	o
Sun.	9	23 20 6.98	9.202	4 17 51.0	58.78	I 4.88	10 39.18	o
Mon.	10	23 23 47.83	9.188	3 54 20.2	58.90	I 4.83	10 23.53	c
Tues.	11	23 27 28.35	9.175	3 30 46.6	59.00	I 4.78	10 7.53	c
Wed.	12	23 31 8.54	9.162	3 7 10.7	59.08	I 4.74	9 51.21	c
Thur.	13	23 34 48.42	9.150	2 43 32.8	59.15	I 4.70	9 34.59	c
Frid.	14	23 38 28.03	9.139	2 19 53.3	59.20	I 4.66	9 17.69	c
Sat.	15	23 42 7.38	9.129	1 56 12.6	59.23	I 4.63	9 0.52	c
Sun.	16	23 45 46.48	9.120	1 32 31.0	59.25	I 4.60	8 43.12	c
Mon.	17	23 49 25.36	9.112	1 8 49.0	59.25	I 4.57	8 25.51	c
Tues.	18	23 53 4.04	9.105	0 45 7.0	59.25	I 4.54	8 7.68	c
Wed.	19	23 56 42.55	9.098	S. 0 21 25.1	59.23	I 4.52	7 49.68	c
Thur.	20	0 0 20.91	9.093	N. 0 2 16.3	59.19	I 4.50	7 31.54	c
Frid.	21	0 3 59.14	9.089	0 25 56.7	59.13	I 4.48	7 13.27	c
Sat.	22	0 7 37.27	9.086	0 49 35.9	59.07	I 4.47	6 54.89	c
Sun.	23	0 11 15.33	9.083	1 13 13.6	58.99	I 4.46	6 36.44	c
Mon.	24	0 14 53.33	9.082	1 36 49.4	58.90	I 4.45	6 17.94	c
Tues.	25	0 18 31.30	9.082	2 0 23.1	58.80	I 4.45	5 59.41	c
Wed.	26	0 22 9.26	9.083	2 23 54.2	58.68	I 4.44	5 40.87	c
Thur.	27	0 25 47.24	9.084	2 47 22.4	58.54	I 4.45	5 22.34	c
Frid.	28	0 29 25.25	9.086	3 10 47.4	58.39	I 4.45	5 3.85	c
Sat.	29	0 33 3.31	9.090	3 34 8.9	58.23	I 4.46	4 45.41	c
Sun.	30	0 36 41.46	9.094	3 57 26.5	58.05	I 4.47	4 27.05	c
Mon.	31	0 40 19.70	9.098	4 20 39.9	57.86	I 4.48	4 8.79	c
Tues.	32	0 43 58.04		N. 4 43 48.6		I 4.50	3 50.63	

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sideral'

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
		h m s	° ' "	' "	m s	h m s
at.	1	22 50 23.95	S. 7 23 41.6	16 10.0	12 30.34	22 37 53.61
un.	2	22 54 8.16	7 0 47.3	16 9.8	12 17.99	22 41 50.17
on.	3	22 57 51.90	6 37 47.1	16 9.5	12 5.18	22 45 46.72
ues.	4	23 1 35.18	6 14 41.1	16 9.3	11 51.90	22 49 43.28
ed.	5	23 5 18.03	5 51 30.0	16 9.0	11 38.20	22 53 39.83
hur.	6	23 9 0.45	5 28 14.0	16 8.8	11 24.07	22 57 36.38
rid.	7	23 12 42.47	5 4 53.7	16 8.5	11 9.53	23 1 32.94
at.	8	23 16 24.09	4 41 29.4	16 8.3	10 54.60	23 5 29.49
un.	9	23 20 5.34	4 18 1.5	16 8.0	10 39.29	23 9 26.05
on.	10	23 23 46.24	3 54 30.4	16 7.7	10 23.64	23 13 22.60
ues.	11	23 27 26.80	3 30 56.5	16 7.4	10 7.65	23 17 19.15
ed.	12	23 31 7.03	3 7 20.4	16 7.2	9 51.32	23 21 15.71
hur.	13	23 34 46.96	2 43 42.2	16 6.9	9 34.70	23 25 12.26
rid.	14	23 38 26.61	2 20 2.5	16 6.7	9 17.80	23 29 8.81
at.	15	23 42 6.00	1 56 21.5	16 6.4	9 0.63	23 33 5.37
un.	16	23 45 45.15	1 32 39.7	16 6.2	8 43.23	23 37 1.92
ues.	17	23 49 24.08	1 8 57.4	16 5.9	8 25.61	23 40 58.47
ed.	18	23 53 2.81	0 45 15.0	16 5.6	8 7.78	23 44 55.03
rid.	19	23 56 41.36	S. 0 21 32.8	16 5.4	7 49.78	23 48 51.58
hur.	20	0 0 19.77	N. 0 2 8.8	16 5.1	7 31.64	23 52 48.13
at.	21	0 3 58.05	0 25 49.6	16 4.8	7 13.36	23 56 44.69
un.	22	0 7 36.23	0 49 29.1	16 4.5	6 54.98	0 0 41.24
on.	23	0 11 14.32	1 13 7.1	16 4.2	6 36.52	0 4 37.80
ues.	24	0 14 52.37	1 36 43.3	16 3.9	6 18.02	0 8 34.35
ed.	25	0 18 30.39	2 0 17.2	16 3.6	5 59.49	0 12 30.90
hur.	26	0 22 8.40	2 23 48.6	16 3.3	5 40.94	0 16 27.46
rid.	27	0 25 46.42	2 47 17.2	16 3.0	5 22.41	0 20 24.01
at.	28	0 29 24.48	3 10 42.5	16 2.8	5 3.92	0 24 20.56
un.	29	0 33 2.59	3 34 4.3	16 2.5	4 45.47	0 28 17.12
on.	30	0 36 40.78	3 57 22.2	16 2.2	4 27.11	0 32 13.67
ues.	31	0 40 19.07	4 20 35.9	16 2.0	4 8.85	0 36 10.22
ed.	32	0 43 57.46	N. 4 43 44.9	16 1.7	3 50.68	0 40 6.70

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.							
Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Pa	
	Noon.	Noon.	Noon.	Noon.	Midnight.	Noon.	<i>M</i>
1	341 8 18.5	S. 0.73	9.9963161	15 42.7	15 50.5	57 39.6	58
2	342 8 27.0	0.76	9.9964292	15 58.5	16 6.3	58 37.3	59
3	343 8 33.9	0.77	9.9965429	16 13.9	16 21.1	59 34.1	60
4	344 8 39.0	0.75	9.9966573	16 27.6	16 33.3	60 24.3	60
5	345 8 42.4	0.70	9.9967721	16 38.0	16 41.4	61 2.3	61
6	346 8 44.0	0.63	9.9968870	16 43.6	16 44.4	61 22.9	61
7	347 8 43.6	0.53	9.9970023	16 43.8	16 41.8	61 23.6	61
8	348 8 41.3	0.41	9.9971179	16 38.5	16 34.0	61 4.1	60
9	349 8 37.0	0.28	9.9972337	16 28.5	16 22.2	60 27.5	60
10	350 8 30.6	0.15	9.9973499	16 15.2	16 7.9	59 38.9	59
11	351 8 22.0	S. 0.03	9.9974664	16 0.2	15 52.5	58 43.7	58
12	352 8 11.2	N. 0.09	9.9975832	15 44.8	15 37.4	57 47.3	57
13	353 7 58.1	0.19	9.9977004	15 30.3	15 23.6	56 54.0	56
14	354 7 42.8	0.27	9.9978183	15 17.4	15 11.6	56 6.5	55
15	355 7 25.2	0.32	9.9979367	15 6.4	15 1.7	55 26.2	55
16	356 7 5.3	0.34	9.9980559	14 57.6	14 54.0	54 53.9	54
17	357 6 43.2	0.34	9.9981758	14 50.9	14 48.4	54 29.5	54
18	358 6 18.7	0.30	9.9982967	14 46.3	14 44.6	54 12.4	54
19	359 5 52.1	0.23	9.9984186	14 43.4	14 42.6	54 2.0	53
20	0 5 23.3	0.13	9.9985414	14 42.2	14 42.2	53 57.5	53
21	1 4 52.4	N. 0.02	9.9986650	14 42.5	14 43.1	53 58.4	54
22	2 4 19.5	S. 0.10	9.9987896	14 44.2	14 45.5	54 4.7	54
23	3 3 44.6	0.24	9.9989150	14 47.3	14 49.3	54 16.0	54
24	4 3 7.8	0.37	9.9990414	14 51.8	14 54.6	54 32.6	54
25	5 2 29.2	0.50	9.9991685	14 57.9	15 1.5	54 54.9	55
26	6 1 48.7	0.62	9.9992961	15 5.6	15 10.2	55 23.4	55
27	7 1 6.4	0.71	9.9994241	15 15.1	15 20.5	55 58.2	56
28	8 0 22.3	0.78	9.9995524	15 26.4	15 32.6	56 39.5	57
29	8 59 36.4	0.83	9.9996808	15 39.1	15 45.9	57 26.3	57
30	9 58 48.8	0.84	9.9998091	15 53.0	16 0.1	58 17.2	58
31	10 57 59.4	0.83	9.9999371	16 7.1	16 13.9	59 9.0	59
32	11 57 8.2	S. 0.78	0.0000648	16 20.3	16 26.3	59 57.7	60

MEAN TIME.

Day of the Month.		THE MOON'S														
		Longitude.				Latitude.				Age.		Meridian Passage.				
		Noon.		Midnight.		Noon.		Midnight.		Noon.						
°	'	"	°	'	"	°	'	"	°	'	"	d	h	m		
n.	1	268	25	7.7	275	11	6.6	S.4	36	19.4	S.4	50	53.2	24.1	20	3.1
n.	2	282	4	23.8	289	5	3.2	5	1	32.6	5	7	54.6	25.1	21	4.3
n.	3	296	12	57.8	303	27	48.6	5	9	39.3	5	6	31.0	26.1	22	4.7
es.	4	310	49	3.2	318	15	56.4	4	58	19.0	4	44	59.0	27.1	23	2.7
ed.	5	325	47	30.8	333	22	38.7	4	26	36.2	4	3	23.3	28.1	23	57.8
ur.	6	341	0	4.1	348	38	26.2	3	35	42.4	3	4	4.6	29.1		♂
id.	7	356	16	23.7	3	52	37.2	2	29	8.7	1	51	38.4	0.6	0	50.5
t.	8	11	25	53.4	18	55	7.4	S.1	12	22.0	S.0	32	8.4	1.6	1	41.9
n.	9	26	19	25.3	33	38	4.6	N.0	8	13.7	N.0	47	58.8	2.6	2	33.3
n.	10	40	50	34.7	47	56	36.6	1	26	26.0	2	2	58.9	3.6	3	25.7
es.	11	54	56	1.9	61	48	51.3	2	37	7.1	3	8	25.8	4.6	4	19.8
ed.	12	68	35	13.1	75	15	22.4	3	36	35.5	4	1	21.7	5.6	5	15.5
ur.	13	81	49	37.9	88	18	23.5	4	22	33.8	4	40	5.6	6.6	6	12.0
id.	14	94	42	4.4	101	1	7.2	4	53	53.0	5	3	55.1	7.6	7	8.0
t.	15	107	15	59.2	113	27	7.5	5	10	13.2	5	12	50.0	8.6	8	1.8
n.	16	119	34	58.9	125	39	58.6	5	11	50.0	5	7	18.9	9.6	8	52.5
n.	17	131	42	31.0	137	42	58.4	4	59	23.8	4	48	13.2	10.6	9	39.7
es.	18	143	41	42.1	149	39	1.5	4	33	56.3	4	16	43.1	11.6	10	23.6
ed.	19	155	35	14.8	161	30	39.1	3	56	46.2	3	34	17.7	12.6	11	5.0
ur.	20	167	25	30.1	173	20	2.9	3	9	32.0	2	42	43.7	13.6	11	44.7
id.	21	179	14	32.7	185	9	13.8	2	14	9.4	1	44	5.6	14.6	12	23.6
t.	22	191	4	21.8	197	0	11.2	1	12	50.4	N.0	40	42.6	15.6	13	2.7
n.	23	202	56	59.3	208	55	3.1	N.0	8	1.1	S.0	24	54.1	16.6	13	43.2
n.	24	214	54	41.2	220	56	14.3	S.0	57	43.1	1	30	4.8	17.6	14	25.9
es.	25	227	0	3.8	233	6	32.2	2	1	38.8	2	32	4.1	18.6	15	11.7
ed.	26	239	16	4.7	245	29	6.2	3	0	59.4	3	28	3.4	19.6	16	1.5
ur.	27	251	46	3.3	258	7	21.9	3	52	55.0	4	15	12.9	20.6	16	55.2
id.	28	264	33	28.0	271	4	46.2	4	34	35.7	4	50	42.7	21.6	17	52.2
t.	29	277	41	38.5	284	24	24.0	5	3	13.2	5	11	48.2	22.6	18	51.0
n.	30	291	13	17.3	298	8	27.0	5	16	9.9	5	16	2.6	23.6	19	49.8
n.	31	305	9	54.9	312	17	34.5	5	11	13.6	5	1	35.2	24.6	20	46.8
es.	32	319	31	10.0	326	50	15.7	S.4	47	3.4	S.4	27	41.7	25.6	21	41.5

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	
<i>SATURDAY 1.</i>				<i>MONDAY 3.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	17 52 51.35	S. 28 3 21.9	16.96	0	19 57 13.39	S. 25 59 28.4	
1	17 55 22.91	28 5 3.6	15.24	1	19 59 49.56	25 52 19.3	
2	17 57 54.76	28 6 35.1	13.52	2	20 2 25.62	25 44 59.1	
3	18 0 26.89	28 7 56.2	11.78	3	20 5 1.56	25 37 27.9	
4	18 2 59.30	28 9 6.9	10.03	4	20 7 37.38	25 29 45.8	
5	18 5 31.97	28 10 7.1	8.28	5	20 10 13.06	25 21 52.8	
6	18 8 4.90	28 10 56.7	6.51	6	20 12 48.61	25 13 49.0	
7	18 10 38.09	28 11 35.8	4.74	7	20 15 24.01	25 5 34.3	
8	18 13 11.53	28 12 4.3	2.96	8	20 17 59.26	24 57 8.8	
9	18 15 45.20	28 12 22.0	1.17	9	20 20 34.35	24 48 32.6	
10	18 18 19.10	28 12 29.1	0.62	10	20 23 9.27	24 39 45.8	
11	18 20 53.23	28 12 25.3	2.43	11	20 25 44.03	24 30 48.4	
12	18 23 27.57	28 12 10.8	4.24	12	20 28 18.61	24 21 40.4	
13	18 26 2.12	28 11 45.4	6.06	13	20 30 53.00	24 12 21.9	
14	18 28 36.86	28 11 9.0	7.88	14	20 33 27.20	24 2 53.0	
15	18 31 11.79	28 10 21.7	9.72	15	20 36 1.21	23 53 13.8	
16	18 33 46.90	28 9 23.4	11.55	16	20 38 35.02	23 43 24.2	
17	18 36 22.18	28 8 14.1	13.40	17	20 41 8.63	23 33 24.5	
18	18 38 57.63	28 6 53.7	15.25	18	20 43 42.02	23 23 14.6	
19	18 41 33.23	28 5 22.2	17.10	19	20 46 15.20	23 12 54.6	
20	18 44 8.98	28 3 39.6	18.96	20	20 48 48.16	23 2 24.5	
21	18 46 44.86	28 1 45.8	20.83	21	20 51 20.90	22 51 44.6	
22	18 49 20.87	27 59 40.9	22.70	22	20 53 53.41	22 40 54.8	
23	18 51 57.01	S. 27 57 24.7	24.57	23	20 56 25.69	S. 22 29 55.2	
<i>SUNDAY 2.</i>				<i>TUESDAY 4.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	18 54 33.26	S. 27 54 57.3	26.45	0	20 58 57.73	S. 22 18 46.0	
1	18 57 9.60	27 52 18.6	28.33	1	21 1 29.53	22 7 27.1	
2	18 59 46.04	27 49 28.7	30.21	2	21 4 1.09	21 55 58.7	
3	19 2 22.56	27 46 27.4	32.09	3	21 6 32.40	21 44 20.9	
4	19 4 59.16	27 43 14.9	33.98	4	21 9 3.46	21 32 33.7	
5	19 7 35.82	27 39 51.0	35.86	5	21 11 34.27	21 20 37.3	
6	19 10 12.54	27 36 15.8	37.75	6	21 14 4.82	21 8 31.7	
7	19 12 49.31	27 32 29.3	39.64	7	21 16 35.12	20 56 17.1	
8	19 15 26.12	27 28 31.5	41.53	8	21 19 5.15	20 43 53.5	
9	19 18 2.97	27 24 22.3	43.42	9	21 21 34.92	20 31 21.0	
10	19 20 39.84	27 20 1.7	45.31	10	21 24 4.43	20 18 39.7	
11	19 23 16.72	27 15 29.8	47.20	11	21 26 33.68	20 5 49.7	
12	19 25 53.61	27 10 46.6	49.09	12	21 29 2.65	19 52 51.2	
13	19 28 30.49	27 5 52.0	50.98	13	21 31 31.35	19 39 44.2	
14	19 31 7.35	27 0 46.1	52.87	14	21 33 59.79	19 26 28.8	
15	19 33 44.19	26 55 29.0	54.75	15	21 36 27.95	19 13 5.2	
16	19 36 21.00	26 50 0.5	56.63	16	21 38 55.83	18 59 33.4	
17	19 38 57.77	26 44 20.7	58.50	17	21 41 23.45	18 45 53.6	
18	19 41 34.49	26 38 29.7	60.38	18	21 43 50.79	18 32 5.8	
19	19 44 11.16	26 32 27.4	62.25	19	21 46 17.86	18 18 10.2	
20	19 46 47.77	26 26 13.9	64.11	20	21 48 44.65	18 4 6.8	
21	19 49 24.30	26 19 49.3	65.97	21	21 51 11.16	17 49 55.8	
22	19 52 0.75	26 13 13.4	67.83	22	21 53 37.40	17 35 37.4	
	19 54 37.12	26 6 26.5	69.68	23	21 56 3.37	17 21 11.5	
	19 57 13.39	S. 25 59 28.4		24	21 58 29.06	S. 17 6 38.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. D e. for 10 ^m .
<i>WEDNESDAY 5.</i>				<i>FRIDAY 7.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	21 58 29.06	S. 17 6 38.4	146.72	0	23 50 16.87	S. 3 45 48.6	179.45
1	22 0 54.48	16 51 58.1	147.89	1	23 52 31.98	3 27 51.9	179.61
2	22 3 19.62	16 37 10.8	149.04	2	23 54 46.96	3 9 54.2	179.74
3	22 5 44.49	16 22 16.5	150.18	3	23 57 1.83	2 51 55.8	179.86
4	22 8 9.09	16 7 15.5	151.29	4	23 59 16.59	2 33 56.6	179.95
5	22 10 33.41	15 52 7.7	152.39	5	0 1 31.24	2 15 56.9	180.02
6	22 12 57.47	15 36 53.4	153.46	6	0 3 45.79	1 57 56.8	180.07
7	22 15 21.26	15 21 32.6	154.51	7	0 6 0.24	1 39 56.4	180.10
8	22 17 44.78	15 6 5.6	155.55	8	0 8 14.60	1 21 55.8	180.11
9	22 20 8.03	14 50 32.3	156.56	9	0 10 28.87	1 3 55.2	180.09
10	22 22 31.02	14 34 52.9	157.56	10	0 12 43.05	0 45 54.6	180.06
11	22 24 53.75	14 19 7.6	158.53	11	0 14 57.15	0 27 54.3	180.01
12	22 27 16.22	14 3 16.4	159.48	12	0 17 11.19	S. 0 9 54.2	179.93
13	22 29 38.43	13 47 19.5	160.41	13	0 19 25.16	N. 0 8 5.4	179.84
14	22 32 0.38	13 31 17.1	161.32	14	0 21 39.06	0 26 4.4	179.72
15	22 34 22.08	13 15 9.2	162.21	15	0 23 52.90	0 44 2.7	179.58
16	22 36 43.53	12 58 55.9	163.07	16	0 26 6.68	1 2 0.2	179.43
17	22 39 4.73	12 42 37.5	163.92	17	0 28 20.41	1 19 56.8	179.25
18	22 41 25.69	12 26 14.0	164.74	18	0 30 34.10	1 37 52.3	179.05
19	22 43 46.41	12 9 45.5	165.55	19	0 32 47.75	1 55 46.6	178.84
20	22 46 6.88	11 53 12.2	166.33	20	0 35 1.36	2 13 39.6	178.60
21	22 48 27.12	11 36 34.2	167.09	21	0 37 14.95	2 31 31.2	178.34
22	22 50 47.12	11 19 51.7	167.83	22	0 39 28.50	2 49 21.3	178.07
23	22 53 6.89	S. 11 3 4.7	168.55	23	0 41 42.03	N. 3 7 9.7	177.77
<i>THURSDAY 6.</i>				<i>SATURDAY 8.</i>			
0	22 55 26.43	S. 10 46 13.4	169.24	0	0 43 55.54	N. 3 24 56.3	177.46
1	22 57 45.75	10 29 17.9	169.92	1	0 46 9.04	3 42 41.0	177.12
2	23 0 4.85	10 12 18.4	170.57	2	0 48 22.54	4 0 23.8	176.77
3	23 2 23.73	9 55 15.0	171.20	3	0 50 36.03	4 18 4.4	176.39
4	23 4 42.40	9 38 7.8	171.81	4	0 52 49.53	4 35 42.7	176.00
5	23 7 0.85	9 20 56.9	172.40	5	0 55 3.02	4 53 18.7	175.59
6	23 9 19.10	9 3 42.6	172.96	6	0 57 16.53	5 10 52.2	175.16
7	23 11 37.15	8 46 24.8	173.51	7	0 59 30.06	5 28 23.1	174.71
8	23 13 54.99	8 29 3.7	174.03	8	1 1 43.60	5 45 51.4	174.24
9	23 16 12.65	8 11 39.5	174.53	9	1 3 57.17	6 3 16.8	173.75
10	23 18 30.11	7 54 12.3	175.01	10	1 6 10.76	6 20 39.3	173.24
11	23 20 47.38	7 36 42.2	175.47	11	1 8 24.39	6 37 58.8	172.72
12	23 23 4.47	7 19 9.4	175.91	12	1 10 38.05	6 55 15.1	172.18
13	23 25 21.38	7 1 34.0	176.32	13	1 12 51.76	7 12 28.2	171.62
14	23 27 38.12	6 43 56.0	176.71	14	1 15 5.51	7 29 37.9	171.04
15	23 29 54.69	6 26 15.7	177.08	15	1 17 19.31	7 46 44.1	170.44
16	23 32 11.10	6 8 33.2	177.43	16	1 19 33.17	8 3 46.7	169.83
17	23 34 27.34	5 50 48.6	177.76	17	1 21 47.08	8 20 45.7	169.19
18	23 36 43.42	5 33 2.1	178.07	18	1 24 1.06	8 37 40.8	168.54
19	23 38 59.35	5 15 13.7	178.35	19	1 26 15.11	8 54 32.1	167.88
20	23 41 15.14	4 57 23.6	178.62	20	1 28 29.22	9 11 19.4	167.19
21	23 43 30.77	4 39 31.9	178.86	21	1 30 43.41	9 28 2.5	166.49
22	23 45 46.27	4 21 38.7	179.08	22	1 32 57.68	9 44 41.5	165.77
23	23 48 1.64	4 3 44.3	179.28	23	1 35 12.03	10 1 16.1	165.04
24	23 50 16.87	S. 3 45 48.6		24	1 37 26.46	N. 10 17 46.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>SUNDAY 9.</i>				<i>TUESDAY 11.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	1 37 26.46	N.10 17 46.3	164.28	0	3 27 35.14	N.21 33 24.9	
1	1 39 40.98	10 34 12.0	163.51	1	3 29 56.74	21 44 30.7	
2	1 41 55.60	10 50 33.1	162.73	2	3 32 18.50	21 55 28.1	
3	1 44 10.32	11 6 49.4	161.92	3	3 34 40.42	22 6 16.9	
4	1 46 25.13	11 23 1.0	161.11	4	3 37 2.51	22 16 57.2	
5	1 48 40.05	11 39 7.6	160.27	5	3 39 24.75	22 27 28.9	
6	1 50 55.07	11 55 9.2	159.42	6	3 41 47.16	22 37 51.9	
7	1 53 10.21	12 11 5.7	158.55	7	3 44 9.72	22 48 6.2	
8	1 55 25.46	12 26 57.1	157.67	8	3 46 32.44	22 58 11.7	
9	1 57 40.82	12 42 43.1	156.77	9	3 48 55.31	23 8 8.3	
10	1 59 56.31	12 58 23.7	155.86	10	3 51 18.33	23 17 56.1	
11	2 2 11.92	13 13 58.8	154.93	11	3 53 41.49	23 27 35.0	
12	2 4 27.65	13 29 28.4	153.98	12	3 56 4.81	23 37 4.9	
13	2 6 43.51	13 44 52.3	153.02	13	3 58 28.27	23 46 25.8	
14	2 8 59.50	14 0 10.4	152.05	14	4 0 51.87	23 55 37.6	
15	2 11 15.63	14 15 22.7	151.06	15	4 3 15.61	24 4 40.3	
16	2 13 31.89	14 30 29.0	150.05	16	4 5 39.48	24 13 33.9	
17	2 15 48.29	14 45 29.3	149.03	17	4 8 3.48	24 22 18.3	
18	2 18 4.84	15 0 23.5	148.00	18	4 10 27.62	24 30 53.5	
19	2 20 21.53	15 15 11.5	146.95	19	4 12 51.88	24 39 19.4	
20	2 22 38.36	15 29 53.2	145.89	20	4 15 16.26	24 47 35.9	
21	2 24 55.35	15 44 28.5	144.81	21	4 17 40.76	24 55 43.2	
22	2 27 12.48	15 58 57.4	143.72	22	4 20 5.37	25 3 41.1	
23	2 29 29.77	N.16 13 19.7	142.62	23	4 22 30.10	N.25 11 29.6	
<i>MONDAY 10.</i>				<i>WEDNESDAY 12.</i>			
0	2 31 47.21	N.16 27 35.4	141.50	0	4 24 54.93	N.25 19 8.6	
1	2 34 4.81	16 41 44.4	140.37	1	4 27 19.87	25 26 38.2	
2	2 36 22.56	16 55 46.6	139.22	2	4 29 44.91	25 33 58.2	
3	2 38 40.48	17 9 41.9	138.06	3	4 32 10.05	25 41 8.8	
4	2 40 58.55	17 23 30.3	136.89	4	4 34 35.28	25 48 9.7	
5	2 43 16.79	17 37 11.7	135.71	5	4 37 0.60	25 55 1.1	
6	2 45 35.19	17 50 45.9	134.51	6	4 39 26.00	26 1 42.9	
7	2 47 53.76	18 4 13.0	133.30	7	4 41 51.47	26 8 15.1	
8	2 50 12.49	18 17 32.8	132.08	8	4 44 17.02	26 14 37.6	
9	2 52 31.39	18 30 45.3	130.85	9	4 46 42.64	26 20 50.4	
10	2 54 50.45	18 43 50.3	129.60	10	4 49 8.32	26 26 53.5	
11	2 57 9.69	18 56 47.9	128.34	11	4 51 34.06	26 32 47.0	
12	2 59 29.09	19 9 38.0	127.07	12	4 53 59.85	26 38 30.7	
13	3 1 48.66	19 22 20.4	125.79	13	4 56 25.69	26 44 4.7	
14	3 4 8.41	19 34 55.2	124.50	14	4 58 51.58	26 49 28.9	
15	3 6 28.32	19 47 22.2	123.19	15	5 1 17.50	26 54 43.3	
16	3 8 48.40	19 59 41.3	121.88	16	5 3 43.45	26 59 48.0	
17	3 11 8.65	20 11 52.6	120.55	17	5 6 9.43	27 4 42.8	
18	3 13 29.07	20 23 55.9	119.21	18	5 8 35.43	27 9 27.9	
19	3 15 49.66	20 35 51.1	117.86	19	5 11 1.45	27 14 3.2	
20	3 18 10.42	20 47 38.3	116.50	20	5 13 27.48	27 18 28.7	
21	3 20 31.35	20 59 17.3	115.14	21	5 15 53.52	27 22 44.3	
22	3 22 52.45	21 10 48.1	113.76	22	5 18 19.55	27 26 50.2	
23	3 25 13.71	21 22 10.7	112.37	23	5 20 45.58	27 30 46.2	
24	3 27 35.14	N.21 33 25.9		24	5 23 11.59	N.27 34 32.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>THURSDAY 13.</i>				<i>SATURDAY 15.</i>			
0	5 23 11.59	N.27 34 32.4	36.07	0	7 17 50.78	N.27 28 14.9	38.25
1	5 25 37.59	27 38 8.8	34.43	1	7 20 9.16	27 24 25.4	39.63
2	5 28 3.56	27 41 35.4	32.80	2	7 22 27.25	27 20 27.6	41.01
3	5 30 29.51	27 44 52.2	31.16	3	7 24 45.07	27 16 21.5	42.38
4	5 32 55.42	27 47 59.2	29.53	4	7 27 2.60	27 12 7.2	43.74
5	5 35 21.28	27 50 56.3	27.90	5	7 29 19.84	27 7 44.8	45.10
6	5 37 47.10	27 53 43.7	26.27	6	7 31 36.79	27 3 14.2	46.44
7	5 40 12.87	27 56 21.3	24.64	7	7 33 53.44	26 58 35.6	47.77
8	5 42 38.58	27 58 49.2	23.01	8	7 36 9.80	26 53 48.9	49.10
9	5 45 4.22	28 1 7.2	21.39	9	7 38 25.85	26 48 54.3	50.41
10	5 47 29.79	28 3 15.6	19.76	10	7 40 41.60	26 43 51.9	51.72
11	5 49 55.28	28 5 14.2	18.14	11	7 42 57.05	26 38 41.6	53.01
12	5 52 20.69	28 7 3.0	16.52	12	7 45 12.19	26 33 23.5	54.30
13	5 54 46.01	28 8 42.1	14.91	13	7 47 27.02	26 27 57.7	55.57
14	5 57 11.23	28 10 11.6	13.30	14	7 49 41.53	26 22 24.3	56.84
15	5 59 36.35	28 11 31.4	11.69	15	7 51 55.73	26 16 43.3	58.09
16	6 2 1.36	28 12 41.5	10.09	16	7 54 9.61	26 10 54.7	59.34
17	6 4 26.26	28 13 42.0	8.49	17	7 56 23.16	26 4 58.7	60.58
18	6 6 51.03	28 14 32.9	6.89	18	7 58 36.40	25 58 55.2	61.80
19	6 9 15.68	28 15 14.3	5.30	19	8 0 49.32	25 52 44.4	63.02
20	6 11 40.20	28 15 46.1	3.71	20	8 3 1.91	25 46 26.2	64.23
21	6 14 4.58	28 16 8.3	2.13	21	8 5 14.18	25 40 0.9	65.43
22	6 16 28.81	28 16 21.1	0.55	22	8 7 26.12	25 33 28.3	66.61
23	6 18 52.90	N.28 16 24.4	1.02	23	8 9 37.73	N.25 26 48.6	67.79
<i>FRIDAY 14.</i>				<i>SUNDAY 16.</i>			
0	6 21 16.84	N.28 16 18.2	2.59	0	8 11 49.01	N.25 20 1.9	68.96
1	6 23 40.61	28 16 2.6	4.16	1	8 13 59.96	25 13 8.2	70.11
2	6 26 4.22	28 15 37.7	5.71	2	8 16 10.57	25 6 7.5	71.26
3	6 28 27.65	28 15 3.4	7.26	3	8 18 20.86	24 59 0.0	72.39
4	6 30 50.90	28 14 19.9	8.81	4	8 20 30.81	24 51 45.6	73.52
5	6 33 13.98	28 13 27.0	10.35	5	8 22 40.43	24 44 24.5	74.63
6	6 35 36.86	28 12 24.9	11.88	6	8 24 49.71	24 36 56.7	75.74
7	6 37 59.54	28 11 13.6	13.41	7	8 26 58.66	24 29 22.2	76.84
8	6 40 22.03	28 9 53.2	14.93	8	8 29 7.27	24 21 41.2	77.92
9	6 42 44.32	28 8 23.6	16.44	9	8 31 15.55	24 13 53.7	78.99
10	6 45 6.39	28 6 45.0	17.95	10	8 33 23.50	24 5 59.7	80.06
11	6 47 28.25	28 4 57.3	19.45	11	8 35 31.11	23 57 59.4	81.11
12	6 49 49.89	28 3 0.6	20.94	12	8 37 38.38	23 49 52.7	82.16
13	6 52 11.31	28 0 55.0	22.43	13	8 39 45.32	23 41 39.8	83.19
14	6 54 32.49	27 58 40.4	23.90	14	8 41 51.92	23 33 20.6	84.21
15	6 56 53.45	27 56 17.0	25.37	15	8 43 58.19	23 24 55.4	85.22
16	6 59 14.16	27 53 44.7	26.84	16	8 46 4.13	23 16 24.0	86.23
17	7 1 34.63	27 51 3.7	28.29	17	8 48 9.73	23 7 46.7	87.22
18	7 3 54.86	27 48 14.0	29.74	18	8 50 15.00	22 59 3.4	88.20
19	7 6 14.83	27 45 15.5	31.18	19	8 52 19.94	22 50 14.2	89.17
20	7 8 34.55	27 42 8.5	32.61	20	8 54 24.55	22 41 19.1	90.13
21	7 10 54.00	27 38 52.8	34.03	21	8 56 28.83	22 32 18.3	91.08
22	7 13 13.20	27 35 28.7	35.44	22	8 58 32.78	22 23 11.8	92.02
23	7 15 32.13	27 31 56.0	36.85	23	9 0 36.40	22 13 59.7	92.95
24	7 17 50.78	N.27 28 14.9		24	9 2 39.70	N.22 4 42.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for rom.	Hour.	Right Ascension.	Declination.	Diff. Dec. for rom.
MONDAY 17.				WEDNESDAY 19.			
	h m s	° ' "	"		h m s	° ' "	"
0	9 2 39.70	N.22 4 42.0	93.87	0	10 35 31.98	N.13 8 13.9	126.78
1	9 4 42.67	21 55 18.8	94.78	1	10 37 21.93	12 55 33.2	127.24
2	9 6 45.31	21 45 50.1	95.68	2	10 39 11.68	12 42 49.8	127.70
3	9 8 47.64	21 36 16.0	96.57	3	10 41 1.23	12 30 3.6	128.15
4	9 10 49.64	21 26 36.6	97.45	4	10 42 50.59	12 17 14.7	128.59
5	9 12 51.32	21 16 51.9	98.32	5	10 44 39.76	12 4 23.2	129.02
6	9 14 52.68	21 7 1.9	99.18	6	10 46 28.75	11 51 29.0	129.45
7	9 16 53.73	20 57 6.9	100.03	7	10 48 17.55	11 38 32.4	129.86
8	9 18 54.46	20 47 6.7	100.87	8	10 50 6.18	11 25 33.2	130.27
9	9 20 54.88	20 37 1.4	101.70	9	10 51 54.63	11 12 31.6	130.67
10	9 22 54.99	20 26 51.2	102.52	10	10 53 42.91	10 59 27.6	131.06
11	9 24 54.78	20 16 36.1	103.33	11	10 55 31.02	10 46 21.2	131.44
12	9 26 54.27	20 6 16.1	104.13	12	10 57 18.97	10 33 12.6	131.81
13	9 28 53.46	19 55 51.3	104.93	13	10 59 6.76	10 20 1.7	132.18
14	9 30 52.34	19 45 21.7	105.71	14	11 0 54.39	10 6 48.6	132.54
15	9 32 50.92	19 34 47.5	106.48	15	11 2 41.87	9 53 33.4	132.89
16	9 34 49.20	19 24 8.6	107.24	16	11 4 29.20	9 40 16.0	133.23
17	9 36 47.18	19 13 25.1	108.00	17	11 6 16.38	9 26 56.6	133.57
18	9 38 44.87	19 2 37.2	108.74	18	11 8 3.42	9 13 35.2	133.90
19	9 40 42.26	18 51 44.7	109.47	19	11 9 50.32	9 0 11.9	134.21
20	9 42 39.37	18 40 47.9	110.20	20	11 11 37.09	8 46 46.6	134.53
21	9 44 36.19	18 29 46.7	110.91	21	11 13 23.72	8 33 19.4	134.83
22	9 46 32.72	18 18 41.2	111.62	22	11 15 10.23	8 19 50.4	135.12
23	9 48 28.98	N.18 7 31.5	112.32	23	11 16 56.61	N. 8 6 19.7	135.41
TUESDAY 18.				THURSDAY 20.			
	h m s	° ' "	"		h m s	° ' "	"
0	9 50 24.95	N.17 56 17.6	113.00	0	11 18 42.87	N. 7 52 47.2	135.69
1	9 52 20.65	17 44 59.6	113.68	1	11 20 29.01	7 39 13.0	135.97
2	9 54 16.07	17 33 37.5	114.35	2	11 22 15.05	7 25 37.2	136.23
3	9 56 11.23	17 22 11.4	115.01	3	11 24 0.97	7 11 59.8	136.49
4	9 58 6.11	17 10 41.3	115.66	4	11 25 46.79	6 58 20.9	136.74
5	10 0 0.73	16 59 7.4	116.30	5	11 27 32.51	6 44 40.5	136.98
6	10 1 55.08	16 47 29.6	116.93	6	11 29 18.13	6 30 58.6	137.21
7	10 3 49.18	16 35 48.0	117.55	7	11 31 3.65	6 17 15.3	137.44
8	10 5 43.02	16 24 2.7	118.17	8	11 32 49.09	6 3 30.7	137.66
9	10 7 36.60	16 12 13.7	118.77	9	11 34 34.44	5 49 44.7	137.87
10	10 9 29.93	16 0 21.1	119.36	10	11 36 19.71	5 35 57.5	138.07
11	10 11 23.01	15 48 24.9	119.95	11	11 38 4.90	5 22 9.1	138.27
12	10 13 15.85	15 36 25.2	120.52	12	11 39 50.01	5 8 19.5	138.45
13	10 15 8.45	15 24 22.1	121.09	13	11 41 35.05	4 54 28.8	138.63
14	10 17 0.81	15 12 15.5	121.65	14	11 43 20.03	4 40 37.0	138.81
15	10 18 52.93	15 0 5.6	122.20	15	11 45 4.95	4 26 44.1	138.97
16	10 20 44.83	14 47 52.4	122.74	16	11 46 49.80	4 12 50.3	139.13
17	10 22 36.49	14 35 35.9	123.28	17	11 48 34.60	3 58 55.5	139.28
18	10 24 27.93	14 23 16.2	123.80	18	11 50 19.35	3 44 59.8	139.42
19	10 26 19.14	14 10 53.4	124.32	19	11 52 4.05	3 31 3.3	139.56
20	10 28 10.13	13 58 27.5	124.83	20	11 53 48.71	3 17 6.0	139.68
21	10 30 0.91	13 45 58.6	125.33	21	11 55 33.32	3 3 7.9	139.80
22	10 31 51.48	13 33 26.6	125.82	22	11 57 17.90	2 49 9.0	139.92
23	10 33 41.83	13 20 51.7	126.30	23	11 59 2.45	2 35 9.5	140.02
24	10 35 31.98	N.13 8 13.9		24	12 0 46.97	N. 2 21 9.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>FRIDAY 21.</i>				<i>SUNDAY 23.</i>			
0	12 0 46.97	N. 2 21 9.4	140.12	0	13 25 6.77	S. 8 48 22.9	135.77
1	12 2 31.46	2 7 8.7	140.21	1	13 26 54.69	9 1 57.5	135.49
2	12 4 15.93	1 53 7.4	140.29	2	13 28 42.77	9 15 30.5	135.19
3	12 6 0.39	1 39 5.7	140.37	3	13 30 31.03	9 29 1.6	134.89
4	12 7 44.83	1 25 3.5	140.43	4	13 32 19.46	9 42 31.0	134.58
5	12 9 29.26	1 11 0.9	140.49	5	13 34 8.07	9 55 58.5	134.26
6	12 11 13.68	0 56 58.0	140.54	6	13 35 56.87	10 9 24.0	133.93
7	12 12 58.10	0 42 54.7	140.59	7	13 37 45.85	10 22 47.6	133.59
8	12 14 42.53	0 28 51.1	140.63	8	13 39 35.02	10 36 9.1	133.24
9	12 16 26.97	0 14 47.4	140.66	9	13 41 24.39	10 49 28.6	132.89
10	12 18 11.41	N. 0 0 43.4	140.68	10	13 43 13.96	11 2 45.9	132.53
11	12 19 55.87	S. 0 13 20.7	140.69	11	13 45 3.73	11 16 1.1	132.15
12	12 21 40.34	0 27 24.8	140.70	12	13 46 53.71	11 29 14.0	131.77
13	12 23 24.84	0 41 29.0	140.70	13	13 48 43.89	11 42 24.6	131.38
14	12 25 9.36	0 55 33.2	140.69	14	13 50 34.29	11 55 32.9	130.98
15	12 26 53.92	1 9 37.4	140.68	15	13 52 24.91	12 8 38.8	130.57
16	12 28 38.51	1 23 41.5	140.66	16	13 54 15.75	12 21 42.3	130.16
17	12 30 23.13	1 37 45.4	140.62	17	13 56 6.81	12 34 43.2	129.73
18	12 32 7.80	1 51 49.2	140.58	18	13 57 58.11	12 47 41.6	129.29
19	12 33 52.52	2 5 52.7	140.54	19	13 59 49.64	13 0 37.3	128.85
20	12 35 37.28	2 19 55.9	140.48	20	14 1 41.40	13 13 30.4	128.39
21	12 37 22.10	2 33 58.8	140.42	21	14 3 33.41	13 26 20.7	127.93
22	12 39 6.98	2 48 1.3	140.35	22	14 5 25.66	13 39 8.3	127.45
23	12 40 51.91	S. 3 2 3.4	140.27	23	14 7 18.15	S. 13 51 53.0	126.97
<i>SATURDAY 22.</i>				<i>MONDAY 24.</i>			
0	12 42 36.91	S. 3 16 5.1	140.19	0	14 9 10.90	S. 14 4 34.9	126.48
1	12 44 21.98	3 30 6.2	140.09	1	14 11 3.91	14 17 13.8	125.98
2	12 46 7.12	3 44 6.8	139.99	2	14 12 57.17	14 29 49.7	125.47
3	12 47 52.34	3 58 6.7	139.88	3	14 14 50.70	14 42 22.5	124.95
4	12 49 37.64	4 12 6.0	139.77	4	14 16 44.50	14 54 52.1	124.41
5	12 51 23.02	4 26 4.6	139.64	5	14 18 38.56	15 7 18.6	123.87
6	12 53 8.50	4 40 2.5	139.51	6	14 20 32.90	15 19 41.8	123.32
7	12 54 54.06	4 53 59.6	139.37	7	14 22 27.51	15 32 1.8	122.76
8	12 56 39.72	5 7 55.8	139.22	8	14 24 22.41	15 44 18.4	122.19
9	12 58 25.49	5 21 51.1	139.07	9	14 26 17.59	15 56 31.5	121.61
10	13 0 11.36	5 35 45.5	138.91	10	14 28 13.05	16 8 41.2	121.02
11	13 1 57.34	5 49 39.0	138.74	11	14 30 8.80	16 20 47.3	120.42
12	13 3 43.43	6 3 31.4	138.56	12	14 32 4.85	16 32 49.8	119.81
13	13 5 29.64	6 17 22.8	138.37	13	14 34 1.20	16 44 48.6	119.19
14	13 7 15.97	6 31 13.0	138.18	14	14 35 57.84	16 56 43.8	118.55
15	13 9 2.42	6 45 2.1	137.97	15	14 37 54.79	17 8 35.1	117.91
16	13 10 49.00	6 58 49.9	137.76	16	14 39 52.05	17 20 22.6	117.26
17	13 12 35.72	7 12 36.5	137.54	17	14 41 49.61	17 32 6.1	116.60
18	13 14 22.57	7 26 21.7	137.32	18	14 43 47.49	17 43 45.7	115.92
19	13 16 9.56	7 40 5.6	137.08	19	14 45 45.68	17 55 21.2	115.24
20	13 17 56.70	7 53 48.1	136.84	20	14 47 44.20	18 6 52.7	114.54
21	13 19 43.98	8 7 29.1	136.58	21	14 49 43.03	18 18 20.0	113.84
22	13 21 31.42	8 21 8.6	136.32	22	14 51 42.19	18 29 43.0	113.12
23	13 23 19.01	8 34 46.6	136.05	23	14 53 41.67	18 41 1.7	112.40
24	13 25 6.77	S. 8 48 22.9		24	14 55 41.49	S. 18 52 16.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>TUESDAY 25.</i>				<i>THURSDAY 27.</i>			
0	14 55 41.49	S. 18 52 16.1	111.66	0	16 38 39.85	S. 26 3 48.5	62.56
1	14 57 41.64	19 3 26.1	110.91	1	16 40 57.80	26 10 3.8	61.24
2	14 59 42.12	19 14 31.5	110.15	2	16 43 16.11	26 16 11.3	59.91
3	15 1 42.95	19 25 32.4	109.38	3	16 45 34.79	26 22 10.7	58.57
4	15 3 44.11	19 36 28.7	108.60	4	16 47 53.83	26 28 2.1	57.22
5	15 5 45.62	19 47 20.3	107.80	5	16 50 13.23	26 33 45.4	55.85
6	15 7 47.48	19 58 7.1	107.00	6	16 52 32.99	26 39 20.5	54.48
7	15 9 49.68	20 8 49.1	106.18	7	16 54 53.10	26 44 47.4	53.09
8	15 11 52.24	20 19 26.2	105.36	8	16 57 13.56	26 50 5.9	51.69
9	15 13 55.15	20 29 58.3	104.52	9	16 59 34.37	26 55 16.0	50.28
10	15 15 58.42	20 40 25.4	103.67	10	17 1 55.53	27 0 17.7	48.86
11	15 18 2.04	20 50 47.5	102.80	11	17 4 17.03	27 5 10.9	47.43
12	15 20 6.03	21 1 4.3	101.93	12	17 6 38.86	27 9 55.4	45.98
13	15 22 10.38	21 11 15.9	101.05	13	17 9 1.03	27 14 31.3	44.52
14	15 24 15.09	21 21 22.2	100.16	14	17 11 23.54	27 18 58.4	43.06
15	15 26 20.17	21 31 23.1	99.25	15	17 13 46.38	27 23 16.8	41.58
16	15 28 25.62	21 41 18.6	98.33	16	17 16 9.54	27 27 26.3	40.09
17	15 30 31.43	21 51 8.6	97.40	17	17 18 33.01	27 31 26.8	38.60
18	15 32 37.62	22 0 53.0	96.45	18	17 20 56.80	27 35 18.4	37.09
19	15 34 44.18	22 10 31.7	95.50	19	17 23 20.91	27 39 0.9	35.57
20	15 36 51.12	22 20 4.7	94.53	20	17 25 45.31	27 42 34.4	34.04
21	15 38 58.43	22 29 31.9	93.55	21	17 28 10.02	27 45 58.6	32.51
22	15 41 6.11	22 38 53.2	92.56	22	17 30 35.03	27 49 13.7	30.96
23	15 43 14.18	S. 22 48 8.6	91.56	23	17 33 0.32	S. 27 52 19.4	29.40
<i>WEDNESDAY 26.</i>				<i>FRIDAY 28.</i>			
0	15 45 22.62	S. 22 57 17.9	90.54	0	17 35 25.90	S. 27 55 15.8	27.84
1	15 47 31.44	23 6 21.2	89.52	1	17 37 51.77	27 58 2.8	26.26
2	15 49 40.65	23 15 18.3	88.48	2	17 40 17.91	28 0 40.4	24.67
3	15 51 50.23	23 24 9.1	87.43	3	17 42 44.32	28 3 8.4	23.08
4	15 54 0.20	23 32 53.7	86.36	4	17 45 10.99	28 5 26.9	21.48
5	15 56 10.55	23 41 31.9	85.29	5	17 47 37.93	28 7 35.7	19.86
6	15 58 21.28	23 50 3.6	84.20	6	17 50 5.12	28 9 34.9	18.24
7	16 0 32.40	23 58 28.8	83.10	7	17 52 32.55	28 11 24.4	16.61
8	16 2 43.90	24 6 47.4	81.99	8	17 55 0.23	28 13 4.1	14.98
9	16 4 55.78	24 14 59.3	80.87	9	17 57 28.14	28 14 33.9	13.33
10	16 7 8.05	24 23 4.5	79.73	10	17 59 56.27	28 15 53.9	11.68
11	16 9 20.70	24 31 2.9	78.58	11	18 2 24.63	28 17 4.0	10.02
12	16 11 33.73	24 38 54.4	77.42	12	18 4 53.21	28 18 4.1	8.35
13	16 13 47.15	24 46 38.9	76.25	13	18 7 22.00	28 18 54.2	6.67
14	16 16 0.95	24 54 16.4	75.07	14	18 9 50.99	28 19 34.2	4.99
15	16 18 15.14	25 1 46.8	73.87	15	18 12 20.17	28 20 4.2	3.31
16	16 20 29.71	25 9 10.0	72.66	16	18 14 49.54	28 20 24.0	1.61
17	16 22 44.66	25 16 26.0	71.44	17	18 17 19.09	28 20 33.7	0.09
18	16 24 59.99	25 23 34.6	70.21	18	18 19 48.82	28 20 33.2	1.80
19	16 27 15.69	25 30 35.9	68.96	19	18 22 18.72	28 20 22.4	3.51
20	16 29 31.77	25 37 29.6	67.70	20	18 24 48.78	28 20 1.4	5.22
21	16 31 48.23	25 44 15.8	66.43	21	18 27 18.99	28 19 30.0	6.95
22	16 34 5.07	25 50 54.4	65.15	22	18 29 49.36	28 18 48.3	8.67
23	16 36 22.27	25 57 25.3	63.86	23	18 32 19.86	28 17 56.3	10.40
24	16 38 39.85	S. 26 3 48.5		24	18 34 50.49	S. 28 16 53.9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SATURDAY 29.</i>				<i>MONDAY 31.</i>			
0	18 34 50.49	S. 28 16 53.9	12.14	0	20 35 35.92	S. 24 1 13.1	95.08
1	18 37 21.25	28 15 41.1	13.88	1	20 38 4.55	23 51 42.6	96.68
2	18 39 52.13	28 14 17.8	15.62	2	20 40 32.99	23 42 2.6	98.28
3	18 42 23.11	28 12 44.1	17.37	3	20 43 1.24	23 32 12.9	99.86
4	18 44 54.20	28 10 59.9	19.12	4	20 45 29.31	23 22 13.8	101.43
5	18 47 25.39	28 9 5.1	20.87	5	20 47 57.19	23 12 5.2	103.00
6	18 49 56.66	28 6 59.9	22.63	6	20 50 24.87	23 1 47.2	104.55
7	18 52 28.01	28 4 44.1	24.39	7	20 52 52.36	22 51 19.9	106.09
8	18 54 59.44	28 2 17.8	26.15	8	20 55 19.65	22 40 43.3	107.63
9	18 57 30.93	27 59 40.9	27.91	9	20 57 46.73	22 29 57.6	109.15
10	19 0 2.48	27 56 53.4	29.68	10	21 0 13.61	22 19 2.7	110.66
11	19 2 34.08	27 53 55.3	31.44	11	21 2 40.28	22 7 58.7	112.16
12	19 5 5.73	27 50 46.7	33.21	12	21 5 6.75	21 56 45.8	113.65
13	19 7 37.42	27 47 27.4	34.98	13	21 7 33.00	21 45 23.9	115.12
14	19 10 9.13	27 43 57.5	36.75	14	21 9 59.04	21 33 53.2	116.58
15	19 12 40.86	27 40 17.0	38.52	15	21 12 24.86	21 22 13.7	118.03
16	19 15 12.61	27 36 25.9	40.29	16	21 14 50.47	21 10 25.5	119.47
17	19 17 44.36	27 32 24.2	42.05	17	21 17 15.85	20 58 28.7	120.90
18	19 20 16.11	27 28 11.9	43.82	18	21 19 41.02	20 46 23.3	122.31
19	19 22 47.86	27 23 49.0	45.59	19	21 22 5.97	20 34 9.4	123.71
20	19 25 19.59	27 19 15.5	47.35	20	21 24 30.69	20 21 47.2	125.09
21	19 27 51.30	27 14 31.4	49.11	21	21 26 55.20	20 9 16.6	126.46
22	19 30 22.98	27 9 36.7	50.88	22	21 29 19.48	19 56 37.9	127.82
23	19 32 54.63	S. 27 4 31.4	52.63	23	21 31 43.54	S. 19 43 51.0	129.16
<i>SUNDAY 30.</i>				<i>TUESDAY, APRIL 1.</i>			
0	19 35 26.23	S. 26 59 15.6	54.39	0	21 34 7.37	S. 19 30 56.0	
1	19 37 57.78	26 53 49.3	56.14				
2	19 40 29.28	26 48 12.4	57.89				
3	19 43 0.72	26 42 25.0	59.64				
4	19 45 32.08	26 36 27.2	61.39				
5	19 48 3.37	26 30 18.8	63.13				
6	19 50 34.58	26 24 0.1	64.86				
7	19 53 5.70	26 17 30.9	66.60				
8	19 55 36.73	26 10 51.3	68.32				
9	19 58 7.66	26 4 1.4	70.05				
10	20 0 38.48	25 57 1.1	71.76				
11	20 3 9.19	25 49 50.5	73.47				
12	20 5 39.78	25 42 29.7	75.18				
13	20 8 10.25	25 34 58.6	76.88				
14	20 10 40.59	25 27 17.3	78.57				
15	20 13 10.80	25 19 25.9	80.26				
16	20 15 40.87	25 11 24.3	81.94				
17	20 18 10.80	25 3 12.7	83.61				
18	20 20 40.58	24 54 51.0	85.27				
19	20 23 10.21	24 46 19.3	86.93				
20	20 25 39.68	24 37 37.8	88.58				
21	20 28 8.99	24 28 46.3	90.22				
22	20 30 38.14	24 19 45.0	91.85				
23	20 33 7.12	24 10 33.9	93.47				
24	20 35 35.92	S. 24 1 13.1					

PHASES OF THE MOON.

- New Moon - - 6 8 38.9
- ☽ First Quarter - - 13 2 36.2
- Full Moon - - 21 4 4.5
- ☾ Last Quarter - - 29

- ☾ Perigee - - -
- ☾ Apogee - - -

MEAN TIME.																			
LUNAR DISTANCES.																			
Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .								
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.		
1	Mars	W.	67	22	49	2508	69	3	51	2489	70	45	20	2470	72	27	16	2450	
	Spica η	W.	66	29	56	2532	68	10	24	2514	69	51	18	2495	71	32	38	2477	
	Antares	W.	20	35	57	2533	22	16	24	2514	23	57	17	2495	25	38	37	2477	
	Venus	E.	37	18	32	2988	35	48	4	2971	34	17	15	2954	32	46	5	2939	
	SUN	E.	72	46	38	2874	71	13	46	2855	69	40	29	2835	68	6	47	2815	
2	Mars	W.	81	3	43	2355	82	48	23	2335	84	33	31	2316	86	19	7	2298	
	Spica η	W.	80	5	56	2383	81	49	55	2364	83	34	22	2345	85	19	16	2326	
	Antares	W.	34	12	0	2381	35	56	2	2362	37	40	31	2343	39	25	28	2325	
	SUN	E.	60	11	40	2714	58	35	19	2694	56	58	31	2675	55	21	17	2655	
	3	Mars	W.	95	13	56	2206	97	2	15	2188	98	51	0	2171	100	40	11	2154
Spica η		W.	94	10	27	2237	95	58	0	2220	97	45	58	2202	99	34	22	2186	
Antares		W.	48	16	53	2234	50	4	30	2217	51	52	32	2200	53	41	0	2183	
SUN		E.	47	8	37	2561	45	28	48	2543	43	48	34	2526	42	7	57	2509	
4		Antares	W.	62	49	23	2106	64	40	13	2093	66	31	23	2079	68	22	55	2066
	SUN	E.	33	39	11	2434	31	56	24	2421	30	13	20	2410	28	29	59	2399	
	8	SUN	W.	23	18	58	2354	25	3	39	2360	26	48	11	2367	28	32	33	2375
		Aldebaran	E.	56	23	21	2096	54	32	15	2110	52	41	31	2125	50	51	10	2141
		Saturn	E.	71	49	14	2045	69	56	50	2057	68	4	44	2067	66	12	54	2079
9	SUN	W.	37	10	49	2434	38	53	35	2448	40	36	2	2463	42	18	7	2478	
	Aldebaran	E.	41	46	4	2241	39	58	37	2265	38	11	46	2292	36	25	34	2321	
	Saturn	E.	56	58	43	2149	55	8	58	2165	53	19	38	2181	51	30	42	2198	
	Pollux	E.	84	55	37	2114	83	4	59	2129	81	14	44	2143	79	24	50	2158	
	10	SUN	W.	50	42	58	2563	52	22	44	2580	54	2	6	2599	55	41	3	2617
Aldebaran		E.	27	46	31	2516	26	5	40	2571	24	26	5	2634	22	47	56	2710	
Saturn		E.	42	32	42	2292	40	46	31	2313	39	0	51	2334	37	15	41	2357	
Pollux		E.	70	21	22	2241	68	33	55	2258	66	46	54	2275	65	0	18	2293	
Regulus		E.	106	58	21	2250	105	11	8	2267	103	24	20	2284	101	37	57	2302	
11	SUN	W.	63	49	26	2713	65	25	49	2732	67	1	47	2751	68	37	19	2770	
	α Arietis	W.	20	30	59	2821	22	4	59	2779	23	39	54	2748	25	15	30	2727	
	Saturn	E.	28	38	17	2482	26	56	39	2512	25	15	43	2544	23	35	31	2580	
	Pollux	E.	56	13	52	2383	54	29	53	2402	52	46	21	2420	51	3	15	2438	
	Regulus	E.	92	52	32	2391	91	8	45	2410	89	25	24	2429	87	42	30	2446	
12	SUN	W.	76	28	41	2867	78	1	42	2885	79	34	20	2905	81	6	33	2923	
	α Arietis	W.	33	17	53	2700	34	54	33	2704	36	31	8	2709	38	7	36	2716	
	Pollux	E.	42	34	13	2529	40	53	40	2547	39	13	32	2565	37	33	49	2582	
	Regulus	E.	79	14	21	2536	77	33	58	2555	75	54	1	2572	74	14	28	2589	
	13	SUN	W.	88	41	54	3013	90	11	51	3030	91	41	27	3047	93	10	42	3063
α Arietis		W.	46	7	13	2763	47	42	30	2774	49	17	32	2785	50	52	19	2796	
Aldebaran		W.	17	8	51	3321	18	32	38	3235	19	58	6	3170	21	24	51	3121	
Regulus		E.	66	2	35	2675	64	25	21	2691	62	48	29	2707	61	11	58	2722	
Mars		E.	117	18	50	2591	115	39	43	2606	114	0	56	2621	112	22	29	2635	
14	SUN	W.	100	32	1	3141	101	59	21	3156	103	26	23	3170	104	53	8	3184	
	α Arietis	W.	58	42	36	2854	60	15	54	2864	61	48	59	2876	63	21	49	2887	
	Aldebaran	W.	28	49	14	3012	30	19	12	3005	31	49	19	3001	33	19	31	2998	
	Regulus	E.	53	14	29	2798	51	39	58	2812	50	5	46	2825	48	31	51	2839	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		LUNAR DISTANCES.												
			Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.					
			° ' "		° ' "		° ' "		° ' "		° ' "		° ' "		° ' "
1	Mars	W.	74 9 39	2431	75 52 29	2412	77 35 46	2393	79 19 31	2374					
	Spica η	W.	73 14 24	2458	74 56 37	2439	76 39 16	2419	78 22 23	2401					
	Antares	W.	27 20 23	2457	29 2 37	2438	30 45 17	2419	32 28 25	2400					
	Venus	E.	31 14 36	2923	29 42 47	2909	28 10 40	2897	26 38 17	2884					
	SUN	E.	66 32 38	2795	64 58 3	2774	63 23 1	2755	61 47 34	2735					
2	Mars	W.	88 5 10	2279	89 51 40	2260	91 38 38	2241	93 26 4	2224					
	Spica η	W.	87 4 37	2308	88 50 25	2290	90 36 39	2272	92 23 20	2254					
	Antares	W.	41 10 51	2306	42 56 42	2288	44 42 59	2270	46 29 43	2252					
	SUN	E.	53 43 37	2636	52 5 31	2616	50 26 58	2598	48 48 0	2580					
3	Mars	W.	102 29 48	2138	104 19 50	2122	106 10 16	2106	108 1 6	2091					
	Spica η	W.	101 23 11	2170	103 12 24	2154	105 2 1	2139	106 52 1	2124					
	Antares	W.	55 29 53	2167	57 19 10	2151	59 8 51	2136	60 58 56	2121					
	SUN	E.	40 26 56	2492	38 45 32	2476	37 3 45	2462	35 21 38	2448					
4	Antares	W.	70 14 46	2054	72 6 56	2043	73 59 24	2032	75 52 9	2021					
	SUN	E.	26 46 23	2390	25 2 34	2382	23 18 34	2377	21 34 27	2375					
8	SUN	W.	30 16 43	2385	32 0 39	2396	33 44 20	2408	35 27 43	2420					
	Aldebaran	E.	49 1 13	2158	47 11 42	2176	45 22 39	2196	43 34 5	2218					
	Saturn	E.	64 21 23	2092	62 30 12	2105	60 39 20	2119	58 48 50	2134					
9	SUN	W.	43 59 51	2494	45 41 13	2511	47 22 11	2527	49 2 46	2544					
	Aldebaran	E.	34 40 5	2353	32 55 22	2387	31 11 28	2425	29 28 29	2468					
	Saturn	E.	49 42 11	2216	47 54 8	2234	46 6 31	2253	44 19 22	2272					
	Pollux	E.	77 35 20	2174	75 46 14	2190	73 57 32	2206	72 9 14	2224					
10	SUN	W.	57 19 35	2636	58 57 41	2655	60 35 22	2674	62 12 37	2693					
	Aldebaran	E.	21 11 29	2800	19 37 1	2910	18 4 55	3050	16 35 44	3229					
	Saturn	E.	35 31 4	2379	33 46 59	2403	32 3 29	2428	30 20 34	2455					
	Pollux	E.	63 14 8	2311	61 28 25	2328	59 43 7	2347	57 58 16	2366					
	Regulus	E.	99 52 0	2319	98 6 29	2337	96 21 24	2355	94 36 45	2373					
11	SUN	W.	70 12 26	2790	71 47 7	2809	73 21 23	2828	74 55 14	2847					
	α Arietis	W.	26 51 34	2713	28 27 57	2704	30 4 31	2700	31 41 11	2699					
	Saturn	E.	21 56 8	2620	20 17 40	2664	18 40 12	2717	17 3 55	2782					
	Pollux	E.	49 20 35	2457	47 38 21	2475	45 56 33	2493	44 15 10	2512					
	Regulus	E.	86 0 1	2464	84 17 57	2483	82 36 20	2501	80 55 8	2519					
12	SUN	W.	82 38 23	2941	84 9 50	2959	85 40 54	2977	87 11 35	2995					
	α Arietis	W.	39 43 54	2724	41 20 2	2732	42 55 59	2742	44 31 43	2753					
	Pollux	E.	35 54 30	2600	34 15 35	2618	32 37 4	2635	30 58 56	2652					
	Regulus	E.	72 35 18	2607	70 56 33	2624	69 18 11	2641	67 40 12	2658					
13	SUN	W.	94 39 37	3079	96 8 12	3096	97 36 27	3111	99 4 7	3126					
	α Arietis	W.	52 26 52	2807	54 1 11	2819	55 35 14	2831	57 9	2842					
	Aldebaran	W.	22 52 35	3085	24 21 3	3058	25 50 4	3038	27 19	3018					
	Regulus	E.	59 35 47	2738	57 59 58	2753	56 24 29	2768	54 45	2782					
	Mars	E.	110 44 22	2649	109 6 34	2663	107 29 5	2677	105 5	2690					
14	SUN	W.	106 19 36	3198	107 45 48	3210	109 11 45	3224	110	3237					
	α Arietis	W.	64 54 24	2893	66 26 46	2909	67 58 54	2918	69	2927					
	Aldebaran	W.	34 49 46	2997	36 20 3	2998	37 50 19	2999	39	3000					
	Regulus	E.	46 58 14	2853	45 24 55	2866	43 51 53	2880	42	2893					

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		LUNAR DISTANCES.							
			Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
14	Mars	E.	104 15 2	2703	102 38 26	2716	101 2 7	2729	99 26 5	2741
	Spica η	E.	107 14 37	2785	105 39 50	2798	104 5 20	2812	102 31 8	2825
15	SUN	W.	112 2 53	3248	113 28 5	3259	114 53 4	3271	116 17 49	3282
	α Arietis	W.	71 2 32	2939	72 34 1	2949	74 5 18	2958	75 36 24	2968
	Aldebaran	W.	40 50 44	3005	42 20 51	3008	43 50 54	3012	45 20 52	3017
	Saturn	W.	24 31 27	3003	26 1 36	3002	27 31 47	3003	29 1 56	3005
	Regulus	E.	40 46 39	2904	39 14 25	2917	37 42 28	2929	36 10 46	2942
	Mars	E.	91 29 45	2795	89 55 11	2806	88 20 51	2815	86 46 43	2825
	Spica η	E.	94 44 5	2883	93 11 25	2894	91 38 59	2905	90 6 46	2915
16	SUN	W.	123 18 34	3331	124 42 9	3340	126 5 34	3348	127 28 50	3356
	α Arietis	W.	83 9 2	3010	84 39 3	3017	86 8 54	3025	87 38 36	3033
	Aldebaran	W.	52 49 16	3040	54 18 39	3045	55 47 56	3050	57 17 7	3055
	Saturn	W.	36 31 45	3024	38 1 28	3029	39 31 5	3034	41 0 36	3038
	Mars	E.	78 58 57	2866	77 25 55	2874	75 53 3	2880	74 20 19	2887
	Spica η	E.	82 28 44	2960	80 57 41	2968	79 26 48	2975	77 56 4	2983
17	Aldebaran	W.	64 41 38	3076	66 10 17	3081	67 38 50	3084	69 7 19	3087
	Saturn	W.	48 26 48	3060	49 55 46	3064	51 24 39	3068	52 53 28	3072
	Pollux	W.	20 26 19	3022	21 56 5	3026	23 25 46	3030	24 55 22	3034
	Mars	E.	66 38 43	2916	65 6 45	2922	63 34 54	2926	62 3 8	2931
	Spica η	E.	70 24 36	3014	68 54 41	3021	67 24 54	3026	65 55 13	3031
18	Aldebaran	W.	76 28 43	3103	77 56 49	3105	79 24 52	3108	80 52 52	3110
	Saturn	W.	60 16 26	3087	61 44 51	3091	63 13 12	3092	64 41 31	3095
	Pollux	W.	32 22 12	3051	33 51 22	3054	35 20 28	3056	36 49 32	3059
	Mars	E.	54 25 36	2949	52 54 19	2951	51 23 5	2954	49 51 54	2957
	Spica η	E.	58 28 11	3051	56 59 1	3055	55 29 56	3057	54 0 54	3060
19	Saturn	W.	72 2 27	3103	73 30 33	3105	74 58 37	3105	76 26 40	3106
	Pollux	W.	44 14 8	3068	45 42 57	3069	47 11 44	3069	48 40 31	3071
	Mars	E.	42 16 43	2966	40 45 48	2967	39 14 54	2969	37 44 2	2970
	Spica η	E.	46 36 34	3071	45 7 49	3073	43 39 7	3075	42 10 27	3076
	Antares	E.	92 28 8	3065	90 59 16	3067	89 30 26	3068	88 1 37	3069
20	Saturn	W.	83 46 45	3107	85 14 46	3108	86 42 46	3107	88 10 47	3106
	Pollux	W.	56 4 11	3072	57 32 55	3073	59 1 38	3071	60 30 23	3071
	Regulus	W.	19 45 54	3154	21 12 58	3144	22 40 14	3135	24 7 41	3127
	Mars	E.	30 9 59	2974	28 39 14	2975	27 8 30	2977	25 37 48	2977
	Spica η	E.	34 47 28	3081	33 18 55	3082	31 50 24	3083	30 21 53	3083
	Antares	E.	80 37 47	3071	79 9 2	3071	77 40 17	3070	76 11 31	3070
21	Saturn	W.	95 31 4	3103	96 59 10	3101	98 27 19	3100	99 55 29	3098
	Pollux	W.	67 54 18	3065	69 23 10	3064	70 52 3	3063	72 20 58	3061
	Regulus	W.	31 26 56	3100	32 55 6	3096	34 23 20	3092	35 51 39	3088
	Antares	E.	68 47 30	3065	67 18 37	3064	65 49 43	3062	64 20 47	3060
22	Saturn	W.	107 16 51	3089	108 45 14	3087	110 13 40	3084	111 42 9	3081
	Pollux	W.	79 46 12	3050	81 15 23	3047	82 44 38	3044	84 13 56	3041
	Regulus	W.	43 14 27	3069	44 43 14	3065	46 12 6	3062	47 41 2	3058
	Antares	E.	56 55 30	3049	55 26 18	3046	53 57 2	3044	52 27 44	3040
	α Aquilæ	E.	105 35 14	3965	104 23 0	3949	103 10 30	3936	101 57 47	3924

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
14	Mars E.	97	50	19	2753	96	14	49	2763	94	39	33	2775	93	4	32	2785
	Spica ♍ E.	100	57	12	2838	99	23	33	2849	97	50	9	2861	96	17	0	2872
15	SUN W.	117	42	22	3293	119	6	42	3302	120	30	51	3312	121	54	48	3322
	α Arietis W.	77	7	17	2976	78	38	0	2985	80	8	31	2993	81	38	52	3002
	Aldebaran W.	46	50	44	3021	48	20	31	3026	49	50	12	3031	51	19	47	3035
	Saturn W.	30	32	2	3008	32	2	5	3012	33	32	3	3015	35	1	57	3020
	Regulus E.	34	39	20	2954	33	8	9	2966	31	37	13	2978	30	6	33	2990
	Mars E.	85	12	47	2834	83	39	3	2842	82	5	30	2851	80	32	8	2859
	Spica ♍ E.	88	34	46	2924	87	2	58	2934	85	31	22	2943	83	59	58	2951
16	SUN W.	128	51	57	3364	130	14	55	3371	131	37	44	3378	133	0	25	3385
	α Arietis W.	89	8	8	3039	90	37	33	3046	92	6	49	3052	93	35	57	3058
	Aldebaran W.	58	46	12	3059	60	15	12	3064	61	44	6	3068	63	12	55	3073
	Saturn W.	42	30	2	3043	43	59	22	3047	45	28	36	3051	46	57	45	3056
	Mars E.	72	47	44	2894	71	15	18	2900	69	42	59	2906	68	10	48	2911
	Spica ♍ E.	76	25	30	2989	74	55	4	2997	73	24	47	3003	71	54	38	3009
	Aldebaran W.	70	35	44	3091	72	4	5	3095	73	32	21	3097	75	0	34	3100
17	Saturn W.	54	22	12	3076	55	50	51	3078	57	19	27	3082	58	47	58	3085
	Pollux W.	26	24	53	3038	27	54	19	3041	29	23	41	3045	30	52	58	3048
	Mars E.	60	31	28	2935	58	59	53	2939	57	28	23	2942	55	56	57	2946
	Spica ♍ E.	64	25	38	3035	62	56	8	3039	61	26	44	3043	59	57	25	3047
	Aldebaran W.	82	20	49	3113	83	48	43	3114	85	16	36	3116	86	44	26	3118
18	Saturn W.	66	9	47	3097	67	38	0	3099	69	6	11	3101	70	34	20	3102
	Pollux W.	38	18	32	3061	39	47	29	3063	41	16	24	3065	42	45	17	3066
	Mars E.	48	20	47	2958	46	49	42	2961	45	18	40	2963	43	47	41	2964
	Spica ♍ E.	52	31	56	3063	51	3	1	3065	49	34	9	3068	48	5	20	3070
	Saturn W.	77	54	42	3106	79	22	44	3107	80	50	45	3108	82	18	45	3108
19	Pollux W.	50	9	16	3071	51	38	1	3073	53	6	44	3072	54	35	28	3073
	Mars E.	36	13	11	2970	34	42	21	2972	33	11	33	2973	31	40	46	2973
	Spica ♍ E.	40	41	48	3078	39	13	11	3079	37	44	36	3079	36	16	1	3081
	Antares E.	86	32	50	3069	85	4	3	3071	83	35	18	3070	82	6	32	3071
	Saturn W.	89	38	49	3106	91	6	51	3105	92	34	54	3105	94	2	58	3103
20	Pollux W.	61	59	8	3071	63	27	53	3069	64	56	41	3069	66	25	29	3068
	Regulus W.	25	35	18	3120	27	3	3	3114	28	30	55	3109	29	58	53	3105
	Mars E.	24	7	6	2979	22	36	27	2981	21	5	50	2979	19	5	16	2986
	Spica ♍ E.	28	53	23	3084	27	24	54	3085	25	56	26	3084	23	59	59	3087
	Antares E.	74	42	45	3069	73	13	58	3069	71	45	10	3070	69	20	3067	
21	Saturn W.	101	23	41	3096	102	51	55	3095	104	20		3095	106	0		3095
	Pollux W.	73	49	56	3059	75	18	56	3057	76	47		3057	78	0		3057
	Regulus W.	37	20	3	3084	38	48	32	3080	40			3080	42			3080
	Antares E.	62	51	49	3058	61	22	48	3056	59			3056	57			3056
22	Saturn W.	113	10	42	3079	114	39	17	3076	116			3076	118			3076
	Pollux W.	85	43	18	3038	87	12	44	3034	89			3034	91			3034
	Regulus W.	49	10	3	3053	50	39	10	3050	51			3050	52			3050
	Antares E.	50	58	21	3037	49	28	54	3034	48			3034	47			3034
	α Aquilæ E.	100	44	51	3912	99	31	43	3901	97			3901	95			3901

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
23	Pollux W.	91 41 29	3023	93 11 13	3019	94 41 2	3014	96 10 57	3010
	Regulus W.	55 6 59	3036	56 36 27	3032	58 6 0	3027	59 35 39	3023
	Antares E.	45 0 9	3023	43 30 25	3019	42 0 36	3014	40 30 41	3010
	α Aquilæ E.	95 51 14	3873	94 37 27	3864	93 23 31	3858	92 9 29	3852
24	Regulus W.	67 5 26	2996	68 35 44	2989	70 6 10	2984	71 36 43	2978
	Mars W.	18 59 9	2894	20 31 36	2884	22 4 15	2875	23 37 6	2866
	Antares E.	32 59 44	2986	31 29 14	2981	29 58 37	2974	28 27 52	2969
	α Aquilæ E.	85 58 0	3833	84 43 32	3832	83 29 3	3831	82 14 33	3831
	Venus E.	118 29 8	3454	117 7 52	3448	115 46 30	3440	114 24 59	3434
25	Regulus W.	79 11 30	2943	80 42 54	2936	82 14 27	2928	83 46 10	2920
	Mars W.	31 24 10	2824	32 58 7	2815	34 32 16	2806	36 6 36	2798
	Spica ♀ W.	25 8 46	2950	26 40 1	2942	28 11 27	2933	29 43 4	2923
	α Aquilæ E.	76 2 26	3847	74 48 12	3853	73 34 4	3860	72 20 3	3868
	Venus E.	107 35 23	3395	106 13 1	3387	104 50 30	3378	103 27 48	3369
	SUN E.	138 0 2	3304	136 35 55	3295	135 11 38	3286	133 47 10	3278
26	Regulus W.	91 27 25	2877	93 0 14	2867	94 33 15	2857	96 6 29	2847
	Mars W.	44 1 13	2751	45 36 45	2741	47 12 31	2731	48 48 30	2720
	Spica ♀ W.	37 24 13	2875	38 57 4	2866	40 30 7	2855	42 3 24	2844
	α Aquilæ E.	66 12 36	3932	64 59 48	3950	63 47 19	3970	62 35 10	3993
	Fomalhaut E.	91 17 53	3058	89 48 52	3018	88 19 39	3039	86 50 15	3079
	Venus E.	96 31 35	3319	95 7 50	3309	93 43 49	3299	92 19 36	3287
	SUN E.	126 42 11	3229	125 16 36	3218	123 50 48	3208	122 24 48	3196
27	Mars W.	56 52 0	2664	58 29 28	2653	60 7 11	2641	61 45 11	2629
	Spica ♀ W.	49 53 21	2788	51 28 5	2776	53 3 5	2764	54 38 20	2751
	Fomalhaut E.	79 20 13	2982	77 49 38	2972	76 13 50	2963	74 47 51	2954
	Venus E.	85 15 2	3225	83 49 23	3213	82 23 29	3200	80 57 20	3186
	SUN E.	115 11 20	3136	113 43 54	3124	112 16 13	3110	110 48 16	3097
28	Mars W.	69 59 28	2563	71 39 14	2549	73 19 19	2535	74 59 43	2520
	Spica ♀ W.	62 38 54	2684	64 15 55	2671	65 53 14	2657	67 30 52	2642
	Antares W.	16 44 52	2686	18 21 50	2672	19 59 8	2657	21 36 46	2642
	Fomalhaut E.	67 10 6	2910	65 38 0	2902	64 5 44	2895	62 33 18	2888
	Venus E.	73 42 18	3113	72 14 24	3098	70 46 12	3082	69 17 40	3067
	SUN E.	103 24 17	3026	101 54 36	3010	100 24 36	2994	98 54 16	2979
29	Mars W.	83 26 50	2447	85 9 18	2431	86 52 8	2415	88 35 21	2400
	Spica ♀ W.	75 44 5	2566	77 23 46	2551	79 3 48	2535	80 44 13	2520
	Antares W.	29 50 3	2565	31 29 46	2549	33 9 51	2533	34 50 18	2517
	Fomalhaut E.	54 49 11	2863	53 16 4	2860	51 42 54	2859	50 9 42	2860
	Venus E.	61 50 6	2984	60 19 33	2966	58 48 38	2950	57 17 22	2932
	SUN E.	91 17 40	2899	89 45 18	2881	88 12 35	2863	86 39 29	2847
30	Mars W.	97 17 4	2320	99 2 34	2304	100 48 28	2287	102 34 46	2271
	Spica ♀ W.	89 11 52	2438	90 54 33	2421	92 37 37	2405	94 21 5	2388
	Antares W.	43 18 11	2436	45 0 55	2419	46 44 3	2403	48 27 34	2386
	Venus E.	49 35 26	2844	48 1 55	2825	46 28 0	2808	44 53 42	2790
	SUN E.	78 48 25	2759	77 13 3	2741	75 37 17	2723	74 1 8	2705
31	Antares W.	57 11 8	2304	58 57 2	2287	60 43 21	2271	62 30 3	2256
	Venus E.	36 56 23	2702	35 19 45	2685	33 42 45	2668	32 5 22	2652
	SUN E.	65 54 24	2617	64 15 52	2599	62 36 55	2582	60 57 36	2565

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.	
		° ' "		° ' "		° ' "		° ' "		
23	Pollux W.	97 40 57	3006	99 11 2	3001	100 41 14	2996	102 11 32	2991	
	Regulus W.	61 5 23	3018	62 35 14	3012	64 5 12	3007	65 35 16	3002	
	Antares E.	39 0 41	3006	37 30 36	3002	36 0 25	2997	34 30 8	2991	
	α Aquilæ E.	90 55 20	3847	89 41 6	3843	88 26 48	3839	87 12 26	3835	
24	Regulus W.	73 7 23	2971	74 38 12	2965	76 9 9	2958	77 40 15	2950	
	Mars W.	25 10 9	2857	26 43 23	2849	28 16 47	2840	29 50 23	2832	
	Antares E.	26 57 1	2963	25 26 2	2957	23 54 55	2951	22 23 41	2944	
	α Aquilæ E.	81 0 3	3833	79 45 35	3834	78 31 8	3838	77 16 45	3842	
	Venus E.	113 3 21	3427	111 41 35	3419	110 19 40	3411	108 57 36	3403	
25	Regulus W.	85 18 3	2912	86 50 7	2903	88 22 22	2894	89 54 48	2886	
	Mars W.	37 41 7	2788	39 15 51	2779	40 50 46	2770	42 25 53	2760	
	Spica ♀ W.	31 14 54	2914	32 46 55	2904	34 19 9	2894	35 51 35	2885	
	α Aquilæ E.	71 6 11	3877	69 52 28	3889	68 38 57	3902	67 25 39	3916	
	Venus E.	102 4 56	3360	100 41 54	3350	99 18 40	3341	97 55 16	3330	
	SUN E.	132 22 33	3268	130 57 44	3259	129 32 45	3249	128 7 34	3239	
26	Regulus W.	97 39 56	2837	99 13 36	2826	100 47 30	2815	102 21 38	2804	
	Mars W.	50 24 43	2710	52 1 10	2699	53 37 52	2688	55 14 48	2676	
	Spica ♀ W.	43 36 55	2833	45 10 40	2822	46 44 39	2811	48 18 52	2799	
	α Aquilæ E.	61 23 24	4018	60 12 2	4045	59 1 7	4077	57 50 43	4111	
	Fomalhaut E.	85 20 38	3020	83 50 50	3010	82 20 49	3001	80 50 37	2991	
	Venus E.	90 55 9	3275	89 30 28	3264	88 5 34	3251	86 40 25	3239	
	SUN E.	120 58 34	3185	119 32 7	3173	118 5 26	3161	116 38 30	3149	
27	Mars W.	63 23 27	2616	65 2 0	2603	66 40 51	2590	68 20 0	2576	
	Spica ♀ W.	56 13 52	2738	57 49 41	2725	59 25 48	2712	61 2 12	2698	
	Fomalhaut E.	73 16 41	2945	71 45 19	2935	70 13 45	2927	68 42 1	2919	
	Venus E.	79 30 54	3172	78 4 11	3157	76 37 11	3143	75 9 53	3128	
	SUN E.	109 20 3	3083	107 51 33	3069	106 22 45	3055	104 53 40	3040	
28	Mars W.	76 40 28	2507	78 21 32	2492	80 2 57	2477	81 44 43	2462	
	Spica ♀ W.	69 8 50	2627	70 47 8	2612	72 25 46	2597	74 4 45	2582	
	Antares W.	23 14 44	2627	24 53 3	2612	26 31 42	2596	28 10 42	2581	
	Fomalhaut E.	61 0 44	2881	59 28 1	2876	57 55 11	2870	56 22 14	2866	
	Venus E.	67 48 50	3050	66 19 39	3034	64 50 9	3017	63 20 18	3001	
	SUN E.	97 23 37	2964	95 52 39	2947	94 21 20	2931	92 49 40	2915	
29	Mars W.	90 18 56	2384	92 2 53	2368	93 47 13	2352	95 31 57	2336	
	Spica ♀ W.	82 24 59	2503	84 6 8	2487	85 47 40	2471	87	454	
	Antares W.	36 31 7	2501	38 12 19	2485	39 53 53	2468			
	Fomalhaut E.	48 36 32	2862	47 3 24	2866	45 30 22	2873			
	Venus E.	55 45 44	2914	54 13 43	2897	52 41 20	2881			
	SUN E.	85 6 2	2829	83 32 12	2811	81 57 59	271			
30	Mars W.	104 21 28	2255	106 8 33	2239	107 56 31				
	Spica ♀ W.	96 4 57	2372	97 49 12	2355	99 33 51				
	Antares W.	50 11 29	2369	51 55 48	2353	53 40 2				
	Venus E.	43 19 1	2772	41 43 57	2754	40 8 1				
	SUN E.	72 24 35	2687	70 47 38	2669	69 10				
31	Antares W.	64 17 8	2240	66 4 36	2224	67 52				
	Venus E.	30 27 37	2635	28 49 30	2620	27 1				
	SUN E.	59 17 53	2548	57 37 46	2532	55				

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

THE SATELLITES OF JUPITER are not visible this Month,

JUPITER being too near to the SUN.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding ca. 478485. ca. 176271	From Mean Noon of January 1.		
	At Mean Midnight,						Days.	Day of the Year.	Fraction of the Year.
	Logarithm of								
	A	B	C	D					
				h m s					
1	-1.2499	+0.8082	+8.4509	-0.9360	1 21 52.94	344	60	.164	
2	1.2524	0.7846	8.4850	0.9368	1 17 57.03	345	61	.167	
3	1.2547	0.7596	8.5164	0.9375	1 14 1.12	346	62	.170	
4	-1.2568	+0.7328	+8.5453	-0.9382	1 10 5.21	347	63	.172	
5	1.2588	0.7042	8.5724	0.9388	1 6 9.30	348	64	.175	
6	1.2607	0.6735	8.5978	0.9395	1 2 13.40	349	65	.178	
7	-1.2624	+0.6402	+8.6217	-0.9400	0 58 17.49	350	66	.181	
8	1.2640	0.6041	8.6441	0.9406	0 54 21.58	351	67	.183	
9	1.2655	0.5646	8.6654	0.9411	0 50 25.67	352	68	.186	
10	-1.2668	+0.5210	+8.6856	-0.9416	0 46 29.76	353	69	.189	
11	1.2680	0.4724	8.7048	0.9421	0 42 33.86	354	70	.192	
12	1.2690	0.4176	8.7231	0.9425	0 38 37.95	355	71	.194	
13	-1.2699	+0.3548	+8.7406	-0.9429	0 34 42.04	356	72	.197	
14	1.2707	0.2811	8.7573	0.9433	0 30 46.13	357	73	.200	
15	1.2713	0.1923	8.7734	0.9437	0 26 50.23	358	74	.203	
16	-1.2718	+0.0805	+8.7890	-0.9440	0 22 54.32	359	75	.205	
17	1.2722	9.9295	8.8039	0.9442	0 18 58.41	360	76	.208	
18	1.2725	9.6958	8.8184	0.9445	0 15 2.50	361	77	.211	
19	-1.2726	+9.1546	+8.8324	-0.9447	0 11 6.60	362	78	.214	
20	1.2726	-9.3232	8.8459	0.9449	0 7 10.69	363	79	.216	
21	1.2724	9.7512	8.8590	0.9450	{ 0 3 14.78 }	364	80	.219	
22	-1.2722	-9.9622	+8.8718	-0.9451	23 55 22.96	0	81	.222	
23	1.2718	0.1035	8.8842	0.9452	23 51 27.05	1	82	.225	
24	1.2712	0.2097	8.8964	0.9452	23 47 31.15	2	83	.227	
25	-1.2706	-0.2949	+8.9082	-0.9452	23 43 35.24	3	84	.230	
26	1.2698	0.3659	8.9197	0.9452	23 39 39.33	4	85	.233	
27	1.2688	0.4268	8.9310	0.9452	23 35 43.42	5	86	.235	
28	-1.2678	-0.4800	+8.9420	-0.9451	23 31 47.52	6	87	.237	
29	1.2666	0.5273	8.9528	0.9450	23 27 51.61	7	88	.239	
30	1.2653	0.5698	8.9634	0.9449	23 23 55.70	8	89	.241	
31	1.2638	0.6084	8.9738	0.9447	23 19 59.79	9			
32	-1.2623	-0.6437	+8.9840	-0.9445	23 16 3.89	10			

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to		Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.		subt. from Apparent Time.		
		h m s	s	° ' "	"	m s	m s	s	
Tues.	1	0 43 58.04	9.103	N. 4 43 48.6	57.66	1 4.50	3 50.63	0.751	
Wed.	2	0 47 36.52	9.109	5 6 52.4	57.44	1 4.51	3 32.61	0.745	
Thur.	3	0 51 15.14	9.116	5 29 50.8	57.20	1 4.53	3 14.72	0.738	
Frid.	4	0 54 53.92	9.123	5 52 43.5	56.95	1 4.56	2 57.00	0.731	
Sat.	5	0 58 32.88	9.131	6 15 30.1	56.68	1 4.59	2 39.45	0.723	
Sun.	6	1 2 12.03	9.140	6 38 10.3	56.39	1 4.61	2 22.09	0.715	
Mon.	7	1 5 51.39	9.149	7 0 43.7	56.09	1 4.65	2 4.95	0.706	
Tues.	8	1 9 30.97	9.159	7 23 9.8	55.78	1 4.68	1 48.01	0.696	
Wed.	9	1 13 10.78	9.170	7 45 28.5	55.45	1 4.72	1 31.32	0.685	
Thur.	10	1 16 50.85	9.181	8 7 39.2	55.10	1 4.76	1 14.88	0.674	
Frid.	11	1 20 31.17	9.192	8 29 41.6	54.74	1 4.80	0 58.69	0.663	
Sat.	12	1 24 11.77	9.204	8 51 35.4	54.37	1 4.85	0 42.78	0.651	
Sun.	13	1 27 52.67	9.217	9 13 20.2	53.98	1 4.90	0 27.17	0.638	
Mon.	14	1 31 33.88	9.231	9 34 55.8	53.58	1 4.95	0 11.87	0.624	
Tues.	15	1 35 15.43	9.245	9 56 21.7	53.17	1 5.00	0 3.10	0.610	
Wed.	16	1 38 57.32	9.260	10 17 37.7	52.74	1 5.05	0 17.73	0.594	
Thur.	17	1 42 39.57	9.276	10 38 43.4	52.30	1 5.11	0 32.00	0.578	
Frid.	18	1 46 22.20	9.293	10 59 38.6	51.85	1 5.17	0 45.88	0.562	
Sat.	19	1 50 5.23	9.310	11 20 22.9	51.38	1 5.23	0 59.37	0.545	
Sun.	20	1 53 48.67	9.328	11 40 56.0	50.90	1 5.29	1 12.44	0.527	
Mon.	21	1 57 32.55	9.347	12 1 17.8	50.41	1 5.36	1 25.09	0.508	
Tues.	22	2 1 16.87	9.366	12 21 27.7	49.91	1 5.42	1 37.28	0.489	
Wed.	23	2 5 1.67	9.386	12 41 25.6	49.40	1 5.49	1 49.02	0.469	
Thur.	24	2 8 46.94	9.407	13 1 11.1	48.87	1 5.56	2 0.27	0.448	
Frid.	25	2 12 32.71	9.428	13 20 44.0	48.33	1 5.63	2 11.02	0.427	
Sat.	26	2 16 18.98	9.449	13 40 3.8	47.77	1 5.70	2 21.27	0.406	
Sun.	27	2 20 5.77	9.471	13 59 10.3	47.20	1 5.77	2 31.02	0.384	
Mon.	28	2 23 53.08	9.494	14 18 3.1	46.62	1 5.84	2 40.23	0.362	
Tues.	29	2 27 40.94	9.517	14 36 42.0	46.03	1 5.92	2 48.90	0.339	
Wed.	30	2 31 29.34	9.540	14 55 6.6	45.41	1 6.00	2 57.03	0.316	
Thur.	31	2 35 18.29		N.15 13 16.5		1 6.07	3 4.62		

* Mean Time of the Semidiameter passing may be found by subtracting 0'.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be <u>subt. from</u> added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
		h m s	° ' "	' "	m s	h m s
Tues.	1	0 43 57.46	N. 4 43 44.9	16 1.7	3 50.68	0 40 6.78
Wed.	2	0 47 35.98	5 6 49.0	16 1.4	3 32.65	0 44 3.33
Thur.	3	0 51 14.65	5 29 47.7	16 1.2	3 14.76	0 47 59.89
Frid.	4	0 54 53.47	5 52 40.7	16 0.9	2 57.03	0 51 56.44
Sat.	5	0 58 32.47	6 15 27.6	16 0.6	2 39.48	0 55 52.99
Sun.	6	1 2 11.67	6 38 8.1	16 0.3	2 22.12	0 59 49.55
Mon.	7	1 5 51.07	7 0 41.7	16 0.0	2 4.97	1 3 46.10
Tues.	8	1 9 30.69	7 23 8.2	15 59.8	1 48.03	1 7 42.66
Wed.	9	1 13 10.55	7 45 27.1	15 59.5	1 31.34	1 11 39.21
Thur.	10	1 16 50.66	8 7 38.0	15 59.2	1 14.89	1 15 35.77
Frid.	11	1 20 31.02	8 29 40.7	15 59.0	0 58.70	1 19 32.32
Sat.	12	1 24 11.66	8 51 34.7	15 58.7	0 42.79	1 23 28.87
Sun.	13	1 27 52.60	9 13 19.8	15 58.5	0 27.17	1 27 25.43
Mon.	14	1 31 33.85	9 34 55.6	15 58.2	0 11.87	1 31 21.98
Tues.	15	1 35 15.43	9 56 21.7	15 57.9	0 3.10	1 35 18.54
Wed.	16	1 38 57.36	10 17 38.0	15 57.6	0 17.73	1 39 15.09
Thur.	17	1 42 39.65	10 38 43.9	15 57.4	0 32.00	1 43 11.65
Frid.	18	1 46 22.31	10 59 39.3	15 57.1	0 45.89	1 47 8.20
Sat.	19	1 50 5.38	11 20 23.8	15 56.9	0 59.38	1 51 4.76
Sun.	20	1 53 48.86	11 40 57.1	15 56.6	1 12.45	1 55 1.31
Mon.	21	1 57 32.77	12 1 19.0	15 56.3	1 25.10	1 58 57.87
Tues.	22	2 1 17.13	12 21 29.1	15 56.1	1 37.29	2 2 54.42
Wed.	23	2 5 1.95	12 41 27.1	15 55.8	1 49.03	2 6 50.98
Thur.	24	2 8 47.25	13 1 12.8	15 55.6	2 0.28	2 10 47.53
Frid.	25	2 12 33.05	13 20 45.7	15 55.3	2 1.1	44.09
Sat.	26	2 16 19.35	13 40 5.7	15 55.0	2 1.1	40.64
Sun.	27	2 20 6.16	13 59 12.3	15 54.8	2 1.1	37.20
Mon.	28	2 23 53.50	14 18 5.2	15 54.5		33.75
Tues.	29	2 27 41.39	14 36 44.2	15 54.3		30.1
Wed.	30	2 31 29.81	14 55 8.8	15 54.0		6.
Thur.	31	2 35 18.78	N. 15 13 18.8	15 53.8		3.

* The Semidiameter for Apparent Noon may be assumed

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Midnight.</i>	<i>Noon.</i>	<i>Midnight.</i>
1	11 57 8.2	S. 0.78	0.0000648	16 20.3	16 26.3	59 57.7	60 19.3
2	12 56 15.1	0.71	0.0001920	16 31.4	16 35.6	60 38.1	60 53.7
3	13 55 20.1	0.61	0.0003186	16 38.8	16 40.7	61 5.3	61 12.5
4	14 54 23.2	0.50	0.0004446	16 41.4	16 40.8	61 15.0	61 12.6
5	15 53 24.3	0.37	0.0005696	16 38.8	16 35.6	61 5.4	60 53.5
6	16 52 23.4	0.24	0.0006937	16 31.2	16 25.7	60 37.3	60 17.3
7	17 51 20.3	S. 0.11	0.0008171	16 19.4	16 12.4	59 54.1	59 28.5
8	18 50 15.2	N. 0.01	0.0009397	16 4.9	15 57.2	59 1.1	58 32.6
9	19 49 7.8	0.12	0.0010615	15 49.3	15 41.5	58 3.7	57 34.9
10	20 47 58.2	0.20	0.0011826	15 33.9	15 26.6	57 7.0	56 40.2
11	21 46 46.2	0.26	0.0013029	15 19.7	15 13.3	56 15.0	55 51.7
12	22 45 32.0	0.29	0.0014227	15 7.5	15 2.3	55 30.4	55 11.3
13	23 44 15.5	0.29	0.0015419	14 57.8	14 53.9	54 54.6	54 40.2
14	24 42 56.8	0.27	0.0016608	14 50.6	14 47.9	54 28.2	54 18.5
15	25 41 35.9	0.20	0.0017793	14 45.9	14 44.5	54 11.0	54 5.7
16	26 40 12.8	0.12	0.0018975	14 43.6	14 43.2	54 2.5	54 1.2
17	27 38 47.5	N. 0.01	0.0020157	14 43.4	14 43.9	54 1.7	54 3.8
18	28 37 20.1	S. 0.11	0.0021337	14 44.9	14 46.4	54 7.5	54 12.7
19	29 35 50.7	0.24	0.0022515	14 48.1	14 50.2	54 19.1	54 26.8
20	30 34 19.3	0.38	0.0023691	14 52.6	14 55.2	54 35.5	54 45.3
21	31 32 46.1	0.51	0.0024866	14 58.2	15 1.4	54 56.0	55 7.7
22	32 31 11.1	0.63	0.0026038	15 4.8	15 8.3	55 20.2	55 33.4
23	33 29 34.4	0.72	0.0027209	15 12.2	15 16.2	55 47.5	56 2.5
24	34 27 56.1	0.79	0.0028376	15 20.6	15 25.1	56 18.3	56 35.0
25	35 26 16.2	0.84	0.0029537	15 29.9	15 34.9	56 52.5	57 10.7
26	36 24 34.7	0.87	0.0030691	15 40.0	15 45.3	57 29.6	57 49.1
27	37 22 51.6	0.86	0.0031836	15 50.8	15 56.2	58 9.0	58 29.1
28	38 21 7.0	0.81	0.0032972	16 1.7	16 7.0	58 49.1	59 8.6
29	39 19 21.0	0.73	0.0034095	16 12.1	16 16.9	59 27.3	59 44.8
30	40 17 33.5	0.64	0.0035205	16 21.1	16 24.8	60 0.5	60 13.9
31	41 15 44.4	S. 0.53	0.0036301	16 27.7	16 29.8	60 24.6	60 32.2

MEAN TIME.

Day of the Week. Day of the Month.		THE MOON'S					
		Longitude.		Latitude.		Age.	Meridian
		Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
ues.	1	319 31 10'0	326 50 15'7	S. 4 47 3'4	S. 4 27 41'7	25'6	21 41'5
Wed.	2	334 14 15'5	341 42 23'4	4 3 40'4	3 35 17'1	26'6	22 34'2
Thur.	3	349 13 44'1	356 47 14'8	3 2 58'0	2 27 16'9	27'6	23 25'8
Frid.	4	4 21 47'2	11 56 10'5	1 48 54'4	S. 1 8 36'2	28'6	♂
Sat.	5	19 29 12'7	26 59 45'0	S. 0 27 12'1	N. 0 14 27'8	0'3	0 17'3
Sun.	6	34 26 44'5	41 49 14'2	N. 0 55 33'5	1 35 18'8	1'3	1 10'1
Mon.	7	49 6 27'4	56 17 46'8	2 13 1'8	2 48 6'9	2'3	2 4'9
Tues.	8	63 22 45'5	70 21 7'1	3 20 4'5	3 48 32'2	3'3	3 1'9
Wed.	9	77 12 44'5	83 57 40'3	4 13 13'7	4 33 58'4	4'3	4 0'4
Thur.	10	90 36 3'7	97 8 11'3	4 50 41'0	5 3 19'8	5'3	4 58'6
Frid.	11	103 34 24'0	109 55 7'6	5 11 57'0	5 16 36'9	6'3	5 54'9
Sat.	12	116 10 50'8	122 22 4'0	5 17 26'1	5 14 32'9	7'3	6 47'8
Sun.	13	128 29 19'2	134 33 8'9	5 8 6'2	4 58 16'3	8'3	7 36'6
Mon.	14	140 34 5'3	146 32 40'5	4 45 13'8	4 29 9'9	9'3	8 21'8
Tues.	15	152 29 25'1	158 24 49'0	4 10 17'0	3 48 46'9	10'3	9 3'9
Wed.	16	164 19 20'6	170 13 26'2	3 24 53'7	2 58 50'9	11'3	9 44'0
Thur.	17	176 7 30'9	182 1 57'6	2 30 53'3	2 1 17'1	12'3	10 23'0
Frid.	18	187 57 7'8	193 53 21'3	1 30 18'9	N. 0 58 16'7	13'3	11 2'0
Sat.	19	199 50 55'6	205 50 7'6	N. 0 25 29'1	S. 0 7 43'8	14'3	11 42'1
Sun.	20	211 51 12'2	217 54 23'4	S. 0 41 1'5	1 14 3'0	15'3	12 24'2
Mon.	21	223 59 54'0	230 7 56'9	1 46 25'9	2 17 47'5	16'3	13 9'4
Tues.	22	236 18 42'9	242 32 24'5	2 47 45'5	3 15 57'9	17'3	13 58'2
Wed.	23	248 49 12'2	255 9 17'7	3 42 2'0	4 5 36'5	18'3	14 50'9
Thur.	24	261 32 52'1	268 0 7'2	4 26 20'4	4 43 53'7	19'3	15 46'8
Frid.	25	274 31 13'6	281 6 21'8	4 57 58'3	5 8 17'3	20'3	16 44'6
Sat.	26	287 45 42'1	294 29 22'5	5 14 35'5	5 16 40'1	21'3	17 1'9
Sun.	27	301 17 29'9	308 10 8'5	5 14 21'5	5 7 32'7	22'3	17 1'9
Mon.	28	315 7 19'2	322 8 59'1	4 56 10'5	4 40 16'4	23'	
Tues.	29	329 15 0'8	336 25 11'3	4 19 56'0	3 55 20'9	24	
Wed.	30	343 39 11'9	350 56 37'2	3 26 48'3	2 54 41'6	25	
Thur.	31	358 16 55'3	5 39 27'8	S. 2 19 29'9	S. 1 41 48'7	26	

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. for
TUESDAY 1.				THURSDAY 3.			
	h m s	° ' "	"		h m s	° ' "	"
0	21 34 7.37	S. 19 30 56.0	130.49	0	23 25 13.34	S. 7 4 15.2	174
1	21 36 30.98	19 17 53.1	131.80	1	23 27 28.30	6 46 46.4	175
2	21 38 54.37	19 4 42.3	133.10	2	23 29 43.16	6 29 14.8	175
3	21 41 17.53	18 51 23.7	134.39	3	23 31 57.92	6 11 40.4	176
4	21 43 40.47	18 37 57.3	135.66	4	23 34 12.60	5 54 3.5	176
5	21 46 3.19	18 24 23.4	136.91	5	23 36 27.18	5 36 24.2	176
6	21 48 25.68	18 10 41.9	138.15	6	23 38 41.68	5 18 42.4	177
7	21 50 47.95	17 56 53.0	139.38	7	23 40 56.11	5 0 58.5	177
8	21 53 10.01	17 42 56.8	140.59	8	23 43 10.46	4 43 12.4	178
9	21 55 31.84	17 28 53.3	141.78	9	23 45 24.74	4 25 24.4	178
10	21 57 53.45	17 14 42.6	142.96	10	23 47 38.96	4 7 34.5	178
11	22 0 14.84	17 0 24.8	144.12	11	23 49 53.12	3 49 42.9	178
12	22 2 36.02	16 46 0.1	145.27	12	23 52 7.22	3 31 49.6	179
13	22 4 56.99	16 31 28.5	146.40	13	23 54 21.27	3 13 54.9	179
14	22 7 17.74	16 16 50.1	147.51	14	23 56 35.28	2 55 58.8	179
15	22 9 38.28	16 2 5.1	148.61	15	23 58 49.25	2 38 1.4	179
16	22 11 58.61	15 47 13.4	149.69	16	0 1 3.18	2 20 2.9	179
17	22 14 18.73	15 32 15.3	150.75	17	0 3 17.07	2 2 3.4	180
18	22 16 38.64	15 17 10.8	151.80	18	0 5 30.94	1 44 3.0	180
19	22 18 58.35	15 2 0.0	152.83	19	0 7 44.79	1 26 1.9	180
20	22 21 17.86	14 46 43.1	153.84	20	0 9 58.62	1 8 0.1	180
21	22 23 37.17	14 31 20.0	154.83	21	0 12 12.44	0 49 57.8	180
22	22 25 56.28	14 15 51.0	155.81	22	0 14 26.25	0 31 55.1	180
23	22 28 15.19	S. 14 0 16.1	156.77	23	0 16 40.05	S. 0 13 52.2	180
WEDNESDAY 2.				FRIDAY 4.			
	h m s	° ' "	"		h m s	° ' "	"
0	22 30 33.91	S. 13 44 35.5	157.72	0	0 18 53.86	N. 0 4 10.9	180
1	22 32 52.44	13 28 49.2	158.64	1	0 21 7.67	0 22 14.0	180
2	22 35 10.78	13 12 57.4	159.55	2	0 23 21.50	0 40 17.0	180
3	22 37 28.94	12 57 0.1	160.44	3	0 25 35.34	0 58 19.8	180
4	22 39 46.91	12 40 57.4	161.30	4	0 27 49.20	1 16 22.2	180
5	22 42 4.70	12 24 49.6	162.16	5	0 30 3.08	1 34 24.2	180
6	22 44 22.32	12 8 36.6	163.00	6	0 32 16.99	1 52 25.5	180
7	22 46 39.76	11 52 18.6	163.81	7	0 34 30.94	2 10 26.1	179
8	22 48 57.04	11 35 55.7	164.61	8	0 36 44.93	2 28 25.9	179
9	22 51 14.15	11 19 28.1	165.39	9	0 38 58.96	2 46 24.6	179
10	22 53 31.09	11 2 55.7	166.15	10	0 41 13.04	3 4 22.3	179
11	22 55 47.88	10 46 18.8	166.90	11	0 43 27.17	3 22 18.7	179
12	22 58 4.51	10 29 37.4	167.62	12	0 45 41.35	3 40 13.8	178
13	23 0 20.99	10 12 51.7	168.32	13	0 47 55.60	3 58 7.4	178
14	23 2 37.33	9 56 1.7	169.01	14	0 50 9.91	4 15 59.4	178
15	23 4 53.52	9 39 7.7	169.68	15	0 52 24.30	4 33 49.6	178
16	23 7 9.56	9 22 9.6	170.32	16	0 54 38.76	4 51 38.0	177
17	23 9 25.47	9 5 7.7	170.95	17	0 56 53.30	5 9 24.5	177
18	23 11 41.25	8 48 2.0	171.56	18	0 59 7.92	5 27 8.8	177
19	23 13 56.90	8 30 52.6	172.15	19	1 1 22.64	5 44 51.0	176
20	23 16 12.42	8 13 39.7	172.72	20	1 3 37.44	6 2 30.8	176
21	23 18 27.83	7 56 23.4	173.27	21	1 5 52.34	6 20 8.1	175
22	23 20 43.11	7 39 3.8	173.80	22	1 8 7.34	6 37 42.9	175
23	23 22 58.28	7 21 41.1	174.31	23	1 10 22.45	6 55 14.9	174
24	23 25 13.34	S. 7 4 15.2		24	1 12 37.66	N. 7 12 44.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Desc. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Desc. for 10 ^m .
<i>SATURDAY 5.</i>				<i>MONDAY 7.</i>			
0	1 12 37.66	N. 7 12 44.1	174.38	0	3 4 1.40	N. 19 38 47.6	128.64
1	1 14 52.99	7 30 10.4	173.87	1	3 6 25.56	19 51 39.4	127.28
2	1 17 8.43	7 47 33.6	173.34	2	3 8 49.92	20 4 23.1	125.90
3	1 19 24.00	8 4 53.6	172.79	3	3 11 14.50	20 16 58.5	124.51
4	1 21 39.69	8 22 10.4	172.21	4	3 13 39.29	20 29 25.5	123.10
5	1 23 55.52	8 39 23.7	171.62	5	3 16 4.29	20 41 44.3	121.68
6	1 26 11.47	8 56 33.4	171.01	6	3 18 29.50	20 53 54.3	120.25
7	1 28 27.56	9 13 39.5	170.38	7	3 20 54.91	21 5 55.7	118.80
8	1 30 43.80	9 30 41.7	169.73	8	3 23 20.52	21 17 48.5	117.35
9	1 33 0.18	9 47 40.1	169.06	9	3 25 46.34	21 29 32.6	115.88
10	1 35 16.70	10 4 34.5	168.37	10	3 28 12.37	21 41 7.9	114.39
11	1 37 33.38	10 21 24.7	167.66	11	3 30 38.59	21 52 34.2	112.90
12	1 39 50.21	10 38 10.6	166.93	12	3 33 5.01	22 3 51.6	111.39
13	1 42 7.20	10 54 52.2	166.18	13	3 35 31.63	22 14 59.9	109.87
14	1 44 24.36	11 11 29.2	165.41	14	3 37 58.43	22 25 59.2	108.34
15	1 46 41.68	11 28 1.6	164.62	15	3 40 25.43	22 36 49.2	106.80
16	1 48 59.17	11 44 29.4	163.81	16	3 42 52.61	22 47 30.0	105.25
17	1 51 16.83	12 0 52.2	162.99	17	3 45 19.98	22 58 1.5	103.69
18	1 53 34.66	12 17 10.1	162.14	18	3 47 47.52	23 8 23.7	102.12
19	1 55 52.67	12 33 23.0	161.28	19	3 50 15.24	23 18 36.4	100.54
20	1 58 10.87	12 49 30.7	160.40	20	3 52 43.14	23 28 39.6	98.94
21	2 0 29.24	13 5 33.0	159.50	21	3 55 11.21	23 38 33.3	97.34
22	2 2 47.80	13 21 30.0	158.58	22	3 57 39.44	23 48 17.3	95.73
23	2 5 6.55	N. 13 37 21.5	157.64	23	4 0 7.83	N. 23 57 51.7	94.12
<i>SUNDAY 6.</i>				<i>TUESDAY 8.</i>			
0	2 7 25.48	N. 13 53 7.3	156.68	0	4 2 36.38	N. 24 7 16.4	92.49
1	2 9 44.61	14 8 47.4	155.71	1	4 5 5.09	24 16 31.3	90.85
2	2 12 3.93	14 24 21.7	154.72	2	4 7 33.94	24 25 36.4	89.21
3	2 14 23.45	14 39 50.0	153.71	3	4 10 2.94	24 34 31.7	87.56
4	2 16 43.17	14 55 12.2	152.68	4	4 12 32.08	24 43 17.0	85.90
5	2 19 3.09	15 10 28.3	151.64	5	4 15 1.35	24 51 52.4	84.23
6	2 21 23.21	15 25 38.1	150.57	6	4 17 30.76	25 0 17.8	82.56
7	2 23 43.53	15 40 41.6	149.49	7	4 20 0.29	25 8 33.2	80.88
8	2 26 4.06	15 55 38.6	148.40	8	4 22 29.94	25 16 38.4	79.19
9	2 28 24.80	16 10 28.9	147.28	9	4 24 59.70	25 24 33.5	77.49
10	2 30 45.75	16 25 12.6	146.15	10	4 27	25 32 18.5	75.80
11	2 33 6.90	16 39 49.6	145.01	11	4 29	25 39 53.3	74.09
12	2 35 28.27	16 54 19.6	143.84	12	4 31	25 47 17.8	72.38
13	2 37 49.85	17 8 42.6	142.66	13	4 33	25 54 32.1	70.66
14	2 40 11.65	17 22 58.6	141.46	14	4 35	26 1 36.0	68.94
15	2 42 33.66	17 37 7.4	140.25	15	4 37	26 8 29.7	67.22
16	2 44 55.88	17 51 8.9	139.02	16	4 39	26 15 13.3	65.49
17	2 47 18.32	18 5 3.0	137.78	17	4 41	26 21 45	63.76
18	2 49 40.97	18 18 49.6	136.52	18	4 43	26 28 1	62.02
19	2 52 3.84	18 32 28.7	135.24	19	4 45	26 34 1	60.28
20	2 54 26.93	18 46 0.2	133.95	20	4 47	26 40 1	58.54
21	2 56 50.23	18 59 23.9	132.64	21	4 49	26 46 1	56.79
22	2 59 13.74	19 12 39.7	131.32	22	4 51	26 51 1	55.04
23	3 1 37.46	19 25 47.7	129.99	23	4 53	26 57 1	53.29
24	3 4 1.40	N. 19 38 47.6		24	4 55	27 2	51.54

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>WEDNESDAY 9.</i>				<i>FRIDAY 11.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	5 2 36.05	N.27 2 44.4	51.55	0	7 1 21.79	N.27 56 20.6	28.91
1	5 5 6.85	27 7 53.7	49.80	1	7 3 45.16	27 53 27.1	30.42
2	5 7 37.66	27 12 52.5	48.05	2	7 6 8.22	27 50 24.6	31.92
3	5 10 8.47	27 17 40.8	46.29	3	7 8 30.97	27 47 13.1	33.40
4	5 12 39.28	27 22 18.5	44.54	4	7 10 53.41	27 43 52.7	34.88
5	5 15 10.07	27 26 45.8	42.79	5	7 13 15.54	27 40 23.4	36.34
6	5 17 40.84	27 31 2.5	41.03	6	7 15 37.34	27 36 45.4	37.80
7	5 20 11.59	27 35 8.7	39.28	7	7 17 58.81	27 32 58.6	39.24
8	5 22 42.31	27 39 4.4	37.53	8	7 20 19.96	27 29 3.2	40.67
9	5 25 12.98	27 42 49.5	35.78	9	7 22 40.78	27 24 59.1	42.10
10	5 27 43.61	27 46 24.2	34.03	10	7 25 1.26	27 20 46.5	43.51
11	5 30 14.18	27 49 48.3	32.28	11	7 27 21.39	27 16 25.5	44.91
12	5 32 44.69	27 53 2.0	30.53	12	7 29 41.19	27 11 56.0	46.30
13	5 35 15.13	27 56 5.2	28.79	13	7 32 0.64	27 7 18.2	47.68
14	5 37 45.49	27 58 57.9	27.05	14	7 34 19.74	27 2 32.1	49.05
15	5 40 15.76	28 1 40.2	25.31	15	7 36 38.49	26 57 37.8	50.41
16	5 42 45.95	28 4 12.0	23.57	16	7 38 56.88	26 52 35.3	51.75
17	5 45 16.03	28 6 33.5	21.84	17	7 41 14.91	26 47 24.8	53.09
18	5 47 46.01	28 8 44.5	20.11	18	7 43 32.59	26 42 6.3	54.41
19	5 50 15.88	28 10 45.2	18.38	19	7 45 49.50	26 36 39.8	55.72
20	5 52 45.62	28 12 35.5	16.66	20	7 48 6.85	26 31 5.5	57.02
21	5 55 15.24	28 14 15.5	14.95	21	7 50 23.43	26 25 23.4	58.31
22	5 57 44.72	28 15 45.1	13.23	22	7 52 39.65	26 19 33.5	59.59
23	6 0 14.06	N.28 17 4.5	11.53	23	7 54 55.50	N.26 13 36.0	60.85
<i>THURSDAY 10.</i>				<i>SATURDAY 12.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	6 2 43.25	N.28 18 13.7	9.82	0	7 57 10.97	N.26 7 30.9	62.10
1	6 5 12.28	28 19 12.6	8.13	1	7 59 26.07	26 1 18.3	63.34
2	6 7 41.16	28 20 1.4	6.43	2	8 1 40.80	25 54 58.2	64.58
3	6 10 9.86	28 20 40.0	4.75	3	8 3 55.16	25 48 30.8	65.79
4	6 12 38.38	28 21 8.5	3.07	4	8 6 9.13	25 41 56.0	67.00
5	6 15 6.72	28 21 26.9	1.40	5	8 8 22.73	25 35 14.0	68.20
6	6 17 34.87	28 21 35.3	0.27	6	8 10 35.95	25 28 24.8	69.38
7	6 20 2.82	28 21 33.7	1.93	7	8 12 48.80	25 21 28.5	70.56
8	6 22 30.56	28 21 22.1	3.58	8	8 15 1.27	25 14 25.2	71.72
9	6 24 58.10	28 21 0.6	5.23	9	8 17 13.35	25 7 14.9	72.87
10	6 27 25.42	28 20 29.3	6.87	10	8 19 25.06	24 59 57.6	74.01
11	6 29 52.52	28 19 48.1	8.50	11	8 21 36.39	24 52 33.6	75.13
12	6 32 19.39	28 18 57.1	10.12	12	8 23 47.33	24 45 2.8	76.25
13	6 34 46.02	28 17 56.4	11.73	13	8 25 57.90	24 37 25.3	77.36
14	6 37 12.42	28 16 46.0	13.34	14	8 28 8.08	24 29 41.2	78.45
15	6 39 38.56	28 15 26.0	14.94	15	8 30 17.89	24 21 50.5	79.53
16	6 42 4.45	28 13 56.4	16.53	16	8 32 27.31	24 13 53.3	80.60
17	6 44 30.08	28 12 17.2	18.11	17	8 34 36.36	24 5 49.7	81.66
18	6 46 55.45	28 10 28.6	19.68	18	8 36 45.03	23 57 39.7	82.71
19	6 49 20.55	28 8 30.5	21.24	19	8 38 53.33	23 49 23.5	83.74
20	6 51 45.37	28 6 23.1	22.79	20	8 41 1.25	23 41 1.0	84.77
21	6 54 9.91	28 4 6.3	24.34	21	8 43 8.79	23 32 32.4	85.78
22	6 56 34.17	28 1 40.2	25.87	22	8 45 15.96	23 23 57.8	86.78
23	6 58 58.13	27 59 5.0	27.40	23	8 47 22.75	23 15 17.1	87.77
24	7 1 21.79	N.27 56 20.6		24	8 49 29.18	N.23 6 30.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
<i>SUNDAY 13.</i>				<i>TUESDAY 15.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	8 49 29.18	N.23 6 30.4	88.75	0	10 24 2.69	N.14 29 6.6	123.86
1	8 51 35.24	22 57 37.9	89.72	1	10 25 53.85	14 16 43.5	124.36
2	8 53 40.92	22 48 39.5	90.68	2	10 27 44.78	14 4 17.3	124.86
3	8 55 46.24	22 39 35.5	91.63	3	10 29 35.48	13 51 48.1	125.35
4	8 57 51.19	22 30 25.7	92.56	4	10 31 25.97	13 39 16.0	125.84
5	8 59 55.78	22 21 10.3	93.49	5	10 33 16.23	13 26 41.0	126.31
6	9 2 0.01	22 11 49.4	94.40	6	10 35 6.27	13 14 3.1	126.78
7	9 4 3.87	22 2 23.0	95.31	7	10 36 56.11	13 1 22.4	127.23
8	9 6 7.37	21 52 51.1	96.20	8	10 38 45.74	12 48 39.0	127.68
9	9 8 10.52	21 43 13.9	97.08	9	10 40 35.17	12 35 52.9	128.13
10	9 10 13.31	21 33 31.4	97.95	10	10 42 24.40	12 23 4.2	128.56
11	9 12 15.75	21 23 43.7	98.82	11	10 44 13.43	12 10 12.8	128.99
12	9 14 17.83	21 13 50.8	99.67	12	10 46 2.27	11 57 18.9	129.40
13	9 16 19.57	21 3 52.8	100.51	13	10 47 50.93	11 44 22.5	129.81
14	9 18 20.96	20 53 49.8	101.34	14	10 49 39.40	11 31 23.6	130.22
15	9 20 22.01	20 43 41.8	102.16	15	10 51 27.69	11 18 22.3	130.61
16	9 22 22.71	20 33 28.8	102.97	16	10 53 15.81	11 5 18.7	131.00
17	9 24 23.08	20 23 11.0	103.77	17	10 55 3.76	10 52 12.7	131.38
18	9 26 23.11	20 12 48.4	104.55	18	10 56 51.54	10 39 4.4	131.75
19	9 28 22.81	20 2 21.1	105.33	19	10 58 39.15	10 25 53.9	132.11
20	9 30 22.17	19 51 49.1	106.10	20	11 0 26.61	10 12 41.2	132.47
21	9 32 21.21	19 41 12.5	106.86	21	11 2 13.91	9 59 26.4	132.82
22	9 34 19.92	19 30 31.3	107.61	22	11 4 1.06	9 46 9.5	133.15
23	9 36 18.31	N.19 19 45.6	108.35	23	11 5 48.06	N. 9 32 50.5	133.50
<i>MONDAY 14.</i>				<i>WEDNESDAY 16.</i>			
0	9 38 16.38	N.19 8 55.5	109.08	0	11 7 34.92	N. 9 19 29.5	133.83
1	9 40 14.13	18 58 1.0	109.80	1	11 9 21.64	9 6 6.5	134.15
2	9 42 11.58	18 47 2.2	110.52	2	11 11 8.22	8 52 41.7	134.46
3	9 44 8.71	18 35 59.1	111.22	3	11 12 54.67	8 39 14.9	134.77
4	9 46 5.53	18 24 51.8	111.91	4	11 14 41.00	8 25 46.3	135.06
5	9 48 2.05	18 13 40.3	112.59	5	11 16 27.20	8 12 15.9	135.35
6	9 49 58.27	18 2 24.7	113.27	6	11 18 13.28	7 58 43.8	135.64
7	9 51 54.20	17 51 5.1	113.93	7	11 19 59.25	7 45 10.0	135.91
8	9 53 49.83	17 39 41.6	114.59	8	11 21 45.10	7 31 34.5	136.18
9	9 55 45.16	17 28 14.1	115.23	9	11 23 30.8	7 17 7.4	136.45
10	9 57 40.21	17 16 42.7	115.87	10	11 25 16.	7 3.7	136.70
11	9 59 34.98	17 5 7.5	116.49	11	11 27 .		136.95
12	10 1 29.47	16 53 28.5	117.11	12	11 28 4.		137.19
13	10 3 23.68	16 41 45.8	117.72	13	11 30		137.42
14	10 5 17.62	16 29 59.5	118.32	14	11 32		
15	10 7 11.28	16 18 9.6	118.91	15	11 34		
16	10 9 4.68	16 6 16.1	119.50	16	11 35		
17	10 10 57.82	15 54 19.1	120.07	17	11 37		
18	10 12 50.69	15 42 18.7	120.64	18	11 39		
19	10 14 43.31	15 30 14.9	121.19	19	11 41		
20	10 16 35.68	15 18 7.7	121.74	20	11		
21	10 18 27.80	15 5 57.2	122.28	21	11		
22	10 20 19.67	14 53 43.5	122.82	22	11		
23	10 22 11.30	14 41 26.6	123.34	23	11		
24	10 24 2.69	N.14 29 6.6		24	11		

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
<i>THURSDAY 17.</i>				<i>SATURDAY 19.</i>			
0	11 49 47.03	N. 3 50 56.5	139.51	0	13 13 56.11	S. 7 22 31.9	138.16
1	11 51 31.62	3 36 59.5	139.65	1	13 15 43.52	7 36 20.8	137.93
2	11 53 16.18	3 23 1.6	139.79	2	13 17 31.08	7 50 8.4	137.70
3	11 55 0.70	3 9 2.8	139.92	3	13 19 18.81	8 3 54.6	137.45
4	11 56 45.20	2 55 3.3	140.05	4	13 21 6.70	8 17 39.4	137.21
5	11 58 29.67	2 41 3.0	140.17	5	13 22 54.76	8 31 22.7	136.96
6	12 0 14.11	2 27 2.0	140.28	6	13 24 42.99	8 45 4.5	136.69
7	12 1 58.54	2 13 0.3	140.38	7	13 26 31.41	8 58 44.7	136.42
8	12 3 42.96	1 58 58.1	140.48	8	13 28 20.00	9 12 23.2	136.14
9	12 5 27.37	1 44 55.2	140.57	9	13 30 8.78	9 26 0.0	135.85
10	12 7 11.78	1 30 51.8	140.65	10	13 31 57.75	9 39 35.1	135.55
11	12 8 56.18	1 16 47.9	140.72	11	13 33 46.91	9 53 8.4	135.24
12	12 10 40.58	1 2 43.6	140.79	12	13 35 36.27	10 6 39.8	134.92
13	12 12 24.99	0 48 38.9	140.85	13	13 37 25.83	10 20 9.3	134.59
14	12 14 9.42	0 34 33.8	140.90	14	13 39 15.59	10 33 36.8	134.25
15	12 15 53.86	0 20 28.3	140.95	15	13 41 5.56	10 47 2.4	133.91
16	12 17 38.33	N. 0 6 22.6	140.99	16	13 42 55.74	11 0 25.8	133.55
17	12 19 22.81	S. 0 7 43.3	141.02	17	13 44 46.14	11 13 47.1	133.19
18	12 21 7.33	0 21 49.4	141.04	18	13 46 36.76	11 27 6.2	132.81
19	12 22 51.88	0 35 55.6	141.06	19	13 48 27.60	11 40 23.1	132.43
20	12 24 36.46	0 50 2.0	141.07	20	13 50 18.67	11 53 37.7	132.04
21	12 26 21.09	1 4 8.4	141.07	21	13 52 9.97	12 6 49.9	131.63
22	12 28 5.76	1 18 14.8	141.06	22	13 54 1.51	12 19 59.7	131.22
23	12 29 50.47	S. 1 32 21.1	141.04	23	13 55 53.28	S. 12 33 7.0	130.80
<i>FRIDAY 18.</i>				<i>SUNDAY 20.</i>			
0	12 31 35.24	S. 1 46 27.4	141.02	0	13 57 45.29	S. 12 46 11.8	130.37
1	12 33 20.07	2 0 33.5	140.99	1	13 59 37.55	12 59 14.0	129.93
2	12 35 4.96	2 14 39.5	140.96	2	14 1 30.06	13 12 13.6	129.48
3	12 36 49.91	2 28 45.2	140.91	3	14 3 22.82	13 25 10.4	129.01
4	12 38 34.93	2 42 50.7	140.86	4	14 5 15.84	13 38 4.5	128.54
5	12 40 20.03	2 56 55.9	140.80	5	14 7 9.12	13 50 55.8	128.06
6	12 42 5.20	3 11 0.7	140.73	6	14 9 2.66	14 3 44.1	127.57
7	12 43 50.46	3 25 5.0	140.66	7	14 10 56.47	14 16 29.6	127.07
8	12 45 35.80	3 39 9.0	140.57	8	14 12 50.55	14 29 12.0	126.55
9	12 47 21.23	3 53 12.4	140.48	9	14 14 44.90	14 41 51.3	126.03
10	12 49 6.75	4 7 15.3	140.38	10	14 16 39.53	14 54 27.4	125.50
11	12 50 52.37	4 21 17.6	140.28	11	14 18 34.43	15 7 0.4	124.95
12	12 52 38.09	4 35 19.3	140.16	12	14 20 29.62	15 19 30.1	124.39
13	12 54 23.92	4 49 20.3	140.04	13	14 22 25.10	15 31 56.5	123.83
14	12 56 9.85	5 3 20.5	139.91	14	14 24 20.86	15 44 19.4	123.25
15	12 57 55.90	5 17 20.0	139.77	15	14 26 16.92	15 56 38.9	122.66
16	12 59 42.06	5 31 18.6	139.63	16	14 28 13.28	16 8 54.9	122.07
17	13 1 28.35	5 45 16.4	139.47	17	14 30 9.93	16 21 7.3	121.46
18	13 3 14.77	5 59 13.2	139.31	18	14 32 6.89	16 33 16.1	120.84
19	13 5 1.31	6 13 9.1	139.14	19	14 34 4.15	16 45 21.1	120.21
20	13 6 47.99	6 27 3.9	138.96	20	14 36 1.73	16 57 22.4	119.57
21	13 8 34.80	6 40 57.6	138.77	21	14 37 59.61	17 9 19.8	118.91
22	13 10 21.76	6 54 50.2	138.57	22	14 39 57.81	17 21 13.2	118.25
23	13 12 8.86	7 8 41.7	138.37	23	14 41 56.32	17 33 2.7	117.58
24	13 13 56.11	S. 7 22 31.9		24	14 43 55.16	S. 17 44 48.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.			Declination.			Diff. Dec. for 10 ^m .	Hour.	Right Ascension.			Declination.			Diff. Dec. for 10 ^m .		
MONDAY 21.								WEDNESDAY 23.								
h	m	s	°	'	"	"		h	m	s	°	'	"	"		
14	43	55.16	S.	17	44	48.2	116.89	0	16	25	52.07	S.	25	26	44.7	69.95
14	45	54.32		17	56	29.6	116.19	1	16	28	8.40		25	33	44.5	68.69
14	47	53.80		18	8	6.7	115.49	2	16	30	25.09		25	40	36.6	67.40
14	49	53.62		18	19	59.6	114.77	3	16	32	42.12		25	47	21.0	66.11
14	51	53.76		18	31	8.2	114.03	4	16	34	59.50		25	53	57.7	64.80
14	53	54.24		18	42	32.4	113.29	5	16	37	17.23		26	0	26.4	63.48
14	55	55.05		18	53	52.2	112.53	6	16	39	35.30		26	6	47.3	62.14
14	57	56.20		19	5	7.4	111.77	7	16	41	53.70		26	13	0.2	60.80
14	59	57.69		19	16	18.0	110.99	8	16	44	12.45		26	19	5.0	59.45
15	1	59.52		19	27	23.9	110.20	9	16	46	31.53		26	25	1.7	58.08
15	4	1.70		19	38	25.1	109.40	10	16	48	50.94		26	30	50.2	56.71
15	6	4.22		19	49	21.5	108.58	11	16	51	10.67		26	36	30.4	55.32
15	8	7.09		20	0	13.0	107.76	12	16	53	30.73		26	42	2.3	53.92
15	10	10.31		20	10	59.5	106.92	13	16	55	51.11		26	47	25.8	52.51
15	12	13.88		20	21	41.0	106.07	14	16	58	11.81		26	52	40.9	51.09
15	14	17.80		20	32	17.4	105.21	15	17	0	32.81		26	57	47.5	49.66
15	16	22.08		20	42	48.7	104.33	16	17	2	54.13		27	2	45.4	48.22
15	18	26.72		20	53	14.7	103.45	17	17	5	15.75		27	7	34.8	46.77
15	20	31.72		21	3	35.4	102.55	18	17	7	37.67		27	12	15.4	45.31
15	22	37.07		21	13	50.7	101.64	19	17	9	59.88		27	16	47.3	43.84
15	24	42.79		21	24	0.6	100.72	20	17	12	22.39		27	21	10.3	42.36
15	26	48.87		21	34	4.9	99.79	21	17	14	45.18		27	25	24.5	40.87
15	28	55.32		21	44	3.6	98.84	22	17	17	8.25		27	29	29.7	39.37
15	31	2.13	S.	21	53	56.7	97.89	23	17	19	31.60	S.	27	33	26.0	37.87
TUESDAY 22.								THURSDAY 24.								
15	33	9.30	S.	22	3	44.0	96.92	0	17	21	55.21	S.	27	37	13.2	36.35
15	35	16.84		22	13	25.5	95.94	1	17	24	19.10		27	40	51.3	34.82
15	37	24.76		22	23	1.1	94.94	2	17	26	43.25		27	44	20.2	33.29
15	39	33.04		22	32	30.8	93.94	3	17	29	7.66		27	47	40.0	31.74
15	41	41.69		22	41	54.4	92.92	4	17	31	32.31		27	50	50.4	30.19
15	43	50.71		22	51	11.9	91.89	5	17	33	57.21		27	53	51.6	28.63
15	46	0.10		23	0	23.3	90.84	6	17	36	22.35		27	56	43.4	27.06
15	48	9.86		23	9	28.3	89.79	7	17	38	47.71		27	59	25.8	25.49
15	50	19.99		23	18	27.0	88.72	8	17	41	13.31		28	1	58.7	23.91
15	52	30.49		23	27	19.3	87.64	9	17	43	39.13		28	4	22.1	22.32
15	54	41.36		23	36	5.2	86.54	10	17	46	5.16		28	6	36.0	20.72
15	56	52.60		23	44	44.5	85.44	11	17	48	31.40		28	8	40.3	19.11
15	59	4.21		23	53	17.1	84.32	12	17	50	57.84		28	10	35.0	17.50
16	1	16.19		24	1	43.0	83.19	13	17	53	24.48		28	12	20.0	15.88
16	3	28.54		24	10	2.2	82.05	14	17	55	51.30		28	13	55.3	14.26
16	5	41.25		24	18	14.5	80.89	15	17	58	18.31		28	15	20.8	12.63
16	7	54.34		24	26	19.8	79.73	16	18	0	45.50		28	16	36.6	10.99
16	10	7.79		24	34	18.2	78.55	17	18	3	12.85		28	17	42.5	9.35
16	12	21.60		24	42	9.5	77.36	18	18	5	40.36		28	18	38.6	7.70
16	14	35.78		24	49	53.7	76.15	19	18	8	8.03		28	19	24.8	6.05
16	16	50.32		24	57	30.6	74.94	20	18	10	35.85		28	20	1.1	4.39
16	19	5.22		25	5	0.2	73.71	21	18	13	3.80		28	20	27.5	2.73
16	21	20.48		25	12	22.5	72.47	22	18	15	31.89		28	20	43.9	1.07
16	23	36.10		25	19	37.3	71.22	23	18	18	0.11		28	20	50.2	0.
16	25	52.07	S.	25	26	44.7		24	18	20	28.45	S.	28	20	46.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>FRIDAY 25.</i>				<i>SUNDAY 27.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
1	18 20 28.45	S. 28 20 46.6	2.28	1	20 19 11.33	S. 24 59 44.4	82.16
2	18 22 56.90	28 20 32.9	3.96	2	20 21 37.19	24 51 31.4	83.71
3	18 25 25.46	28 20 9.2	5.64	3	20 24 2.86	24 43 9.1	85.26
4	18 27 54.11	28 19 35.4	7.32	4	20 26 28.34	24 34 37.6	86.79
5	18 30 22.85	28 18 51.4	9.01	5	20 28 53.62	24 25 56.8	88.32
6	18 32 51.68	28 17 57.4	10.70	6	20 31 18.70	24 17 6.9	89.84
7	18 35 20.58	28 16 53.2	12.39	7	20 33 43.58	24 8 7.9	91.34
8	18 37 49.55	28 15 38.9	14.09	8	20 36 8.26	23 58 59.9	92.84
9	18 40 18.58	28 14 14.3	15.78	9	20 38 32.73	23 49 42.8	94.33
10	18 42 47.67	28 12 39.6	17.48	10	20 40 56.99	23 40 16.8	95.81
11	18 45 16.81	28 10 54.8	19.18	11	20 43 21.04	23 30 41.9	97.28
12	18 47 45.98	28 8 59.7	20.88	12	20 45 44.87	23 20 58.3	98.74
13	18 50 15.19	28 6 54.4	22.59	13	20 48 8.48	23 11 5.8	100.19
14	18 52 44.43	28 4 38.9	24.29	14	20 50 31.88	23 1 4.6	101.63
15	18 55 13.68	28 2 13.2	25.99	15	20 52 55.05	22 50 54.9	103.06
16	18 57 42.94	27 59 37.2	27.69	16	20 55 18.00	22 40 36.5	104.48
17	19 0 12.21	27 56 51.1	29.39	17	20 57 40.73	22 30 9.6	105.89
18	19 2 41.47	27 53 54.7	31.10	18	21 0 3.23	22 19 34.3	107.28
19	19 5 10.73	27 50 48.1	32.80	19	21 2 25.50	22 8 50.6	108.67
20	19 7 39.96	27 47 31.4	34.50	20	21 4 47.55	21 57 58.6	110.04
21	19 10 9.17	27 44 4.4	36.19	21	21 7 9.37	21 46 58.3	111.41
22	19 12 38.35	27 40 27.2	37.89	22	21 9 30.95	21 35 49.8	112.76
23	19 15 7.49	27 36 39.9	39.59	23	21 11 52.31	21 24 33.3	114.10
24	19 17 36.59	S. 27 32 42.4	41.28	24	21 14 13.44	S. 21 13 8.7	115.43
<i> SATURDAY 26. </i>				<i> MONDAY 28. </i>			
0	19 20 5.63	S. 27 28 34.7	42.97	0	21 16 34.33	S. 21 1 36.1	116.74
1	19 22 34.61	27 24 16.9	44.66	1	21 18 54.99	20 49 55.6	118.05
2	19 25 3.53	27 19 48.9	46.34	2	21 21 15.42	20 38 7.3	119.34
3	19 27 32.38	27 15 10.9	48.02	3	21 23 35.62	20 26 11.3	120.62
4	19 30 1.15	27 10 22.8	49.70	4	21 25 55.59	20 14 7.6	121.89
5	19 32 29.84	27 5 24.6	51.37	5	21 28 15.33	20 1 56.2	123.15
6	19 34 58.43	27 0 16.3	53.04	6	21 30 34.83	19 49 37.3	124.39
7	19 37 26.93	26 54 58.1	54.71	7	21 32 54.11	19 37 11.0	125.62
8	19 39 55.33	26 49 29.8	56.37	8	21 35 13.15	19 24 37.3	126.84
9	19 42 23.62	26 43 51.6	58.03	9	21 37 31.97	19 11 56.2	128.05
10	19 44 51.79	26 38 3.4	59.68	10	21 39 50.56	18 59 7.9	129.24
11	19 47 19.85	26 32 5.4	61.33	11	21 42 8.92	18 46 12.5	130.44
12	19 49 47.78	26 25 57.4	62.97	12	21 44 27.05	18 33 10.0	131.59
13	19 52 15.58	26 19 39.6	64.60	13	21 46 44.96	18 20 0.5	132.74
14	19 54 43.24	26 13 12.0	66.23	14	21 49 2.64	18 6 44.1	133.88
15	19 57 10.76	26 6 34.6	67.86	15	21 51 20.11	17 53 20.8	135.01
16	19 59 38.14	25 59 47.4	69.47	16	21 53 37.35	17 39 50.7	136.12
17	20 2 5.37	25 52 50.6	71.08	17	21 55 54.38	17 26 14.0	137.22
18	20 4 32.43	25 45 44.1	72.69	18	21 58 11.19	17 12 30.7	138.31
19	20 6 59.34	25 38 28.0	74.29	19	22 0 27.78	16 58 40.9	139.38
20	20 9 26.09	25 31 2.3	75.88	20	22 2 44.17	16 44 44.6	140.44
21	20 11 52.66	25 23 27.0	77.46	21	22 5 0.34	16 30 42.0	141.48
22	20 14 19.06	25 15 42.2	79.03	22	22 7 16.31	16 16 33.1	142.51
23	20 16 45.29	25 7 48.0	80.60	23	22 9 32.07	16 2 18.0	143.53
24	20 19 11.33	S. 24 59 44.4		24	22 11 47.63	S. 15 47 56.9	

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Dif. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Dif. Dec. for 10 ^m .
<i>TUESDAY 29.</i>				<i>WEDNESDAY 30.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	22 11 47.63	S. 15 47 56.9	144.53	0	23 5 8.15	S. 9 36 47.9	164.13
1	22 14 2.99	15 33 29.7	145.52	1	23 7 19.69	9 20 23.1	164.75
2	22 16 18.15	15 18 56.6	146.49	2	23 9 31.12	9 3 54.6	165.36
3	22 18 33.11	15 4 17.7	147.45	3	23 11 42.45	8 47 22.4	165.95
4	22 20 47.89	14 49 33.0	148.39	4	23 13 53.67	8 30 46.7	166.53
5	22 23 2.47	14 34 42.7	149.32	5	23 16 4.80	8 14 7.6	167.09
6	22 25 16.87	14 19 46.7	150.24	6	23 18 15.83	7 57 25.1	167.63
7	22 27 31.08	14 4 45.3	151.14	7	23 20 26.77	7 40 39.3	168.16
8	22 29 45.12	13 49 38.5	152.02	8	23 22 37.64	7 23 50.3	168.67
9	22 31 58.98	13 34 26.3	152.90	9	23 24 48.42	7 6 58.3	169.16
10	22 34 12.67	13 19 9.0	153.75	10	23 26 59.13	6 50 3.4	169.63
11	22 36 26.18	13 3 46.5	154.59	11	23 29 9.77	6 33 5.6	170.09
12	22 38 39.53	12 48 18.9	155.42	12	23 31 20.35	6 16 5.0	170.54
13	22 40 52.72	12 32 46.4	156.23	13	23 33 30.87	5 59 1.8	170.97
14	22 43 5.75	12 17 9.0	157.03	14	23 35 41.33	5 41 56.0	171.38
15	22 45 18.62	12 1 26.9	157.81	15	23 37 51.74	5 24 47.7	171.77
16	22 47 31.35	11 45 40.0	158.57	16	23 40 2.11	5 7 37.1	172.14
17	22 49 43.92	11 29 48.6	159.32	17	23 42 12.44	4 50 24.2	172.50
18	22 51 56.35	11 13 52.7	160.05	18	23 44 22.73	4 33 9.2	172.84
19	22 54 8.64	10 57 52.3	160.77	19	23 46 32.99	4 15 52.2	173.17
20	22 56 20.80	10 41 47.7	161.48	20	23 48 43.23	3 58 33.2	173.47
21	22 58 32.82	10 25 38.8	162.16	21	23 50 53.45	3 41 12.3	173.76
22	23 0 44.72	10 9 25.8	162.83	22	23 53 3.65	3 23 49.7	174.03
23	23 2 56.49	9 53 8.8	163.49	23	23 55 13.84	3 6 25.5	174.29
24	23 5 8.15	S. 9 36 47.9		24	23 57 24.03	S. 2 48 59.8	

PHASES OF THE MOON.

	d h m
☉ New Moon - - - - -	4 17 52.7
☽ First Quarter - - - - -	11 16 52.0
☾ Full Moon - - - - -	19 21 13.6
☾ Last Quarter - - - - -	27 11 26.1

☾ Perigee - - - - -	4
☾ Apogee - - - - -	4

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
1	Antares W.	71	29	18	2179	73	18	17	2165	75	7	37	2151	76	57	18	2137
	Jupiter E.	32	27	57	2257	30	40	54	2243	28	53	31	2230	27	5	48	2217
	SUN E.	52	35	10	2484	50	53	34	2468	49	11	36	2453	47	29	17	2438
2	Antares W.	86	10	41	2076	88	2	17	2066	89	54	9	2055	91	46	17	2046
	SUN E.	38	52	45	2373	37	8	32	2362	35	24	2	2351	33	39	17	2341
7	SUN W.	31	19	21	2495	33	0	41	2512	34	41	37	2530	36	22	8	2548
	Saturn E.	35	50	23	2275	34	3	47	2297	32	17	43	2321	30	32	14	2346
	Pollux E.	62	3	33	2192	60	14	53	2209	58	26	39	2225	56	38	48	2242
	Regulus E.	98	42	1	2201	96	53	35	2217	95	5	33	2234	93	17	56	2251
8	SUN W.	44	38	25	2643	46	16	22	2662	47	53	53	2682	49	30	57	2702
	Pollux E.	47	46	2	2331	46	0	47	2350	44	16	0	2368	42	31	39	2387
	Regulus E.	84	26	10	2339	82	41	8	2357	80	56	32	2376	79	12	23	2395
9	SUN W.	57	29	34	2803	59	3	58	2824	60	37	55	2844	62	11	26	2864
	Pollux E.	33	56	44	2483	32	15	7	2502	30	33	56	2522	28	53	13	2540
	Regulus E.	70	38	23	2490	68	56	56	2510	67	15	56	2529	65	35	23	2547
	Mars E.	112	49	29	2362	111	5	0	2381	109	20	58	2400	107	37	23	2418
10	SUN W.	69	52	37	2963	71	23	36	2982	72	54	11	3001	74	24	23	3020
	Aldebaran W.	25	1	25	2935	26	33	0	2919	28	4	55	2909	29	37	3	2903
	Regulus E.	57	19	6	2642	55	41	8	2660	54	3	34	2678	52	26	25	2696
	Mars E.	99	5	54	2508	97	24	52	2525	95	44	14	2543	94	4	0	2560
	Spica ♍ E.	111	19	48	2630	109	41	34	2649	108	3	45	2666	106	26	19	2683
11	SUN W.	81	49	40	3109	83	17	39	3126	84	45	17	3143	86	12	35	3158
	Aldebaran W.	37	18	26	2910	38	50	32	2916	40	22	31	2922	41	54	22	2929
	Saturn W.	19	23	46	2964	20	54	44	2958	22	25	50	2954	23	57	1	2953
	Regulus E.	44	26	35	2784	42	51	46	2801	41	17	19	2818	39	43	14	2835
	Mars E.	85	48	35	2641	84	10	36	2657	82	32	58	2671	80	55	39	2686
	Spica ♍ E.	98	24	50	2766	96	49	37	2781	95	14	44	2796	93	40	11	2811
12	SUN W.	93	24	26	3233	94	49	56	3247	96	15	10	3260	97	40	8	3272
	Aldebaran W.	49	31	9	2970	51	1	59	2979	52	32	38	2988	54	3	6	2996
	Saturn W.	31	32	14	2977	33	2	56	2984	34	33	29	2991	36	3	53	2999
	Regulus E.	31	58	7	2916	30	26	8	2932	28	54	30	2948	27	23	12	2965
	Mars E.	72	53	54	2754	71	18	26	2767	69	43	15	2779	68	8	20	2791
	Spica ♍ E.	85	52	8	2880	84	19	24	2893	82	46	56	2905	81	14	44	2917
13	SUN W.	104	41	26	3330	106	5	3	3340	107	28	28	3350	108	51	42	3359
	Aldebaran W.	61	32	51	3037	63	2	18	3043	64	31	37	3051	66	0	46	3058
	Saturn W.	43	33	26	3038	45	2	52	3045	46	32	9	3052	48	1	17	3059
	Pollux W.	17	14	6	2980	18	44	44	2987	20	15	13	2994	21	45	33	3002
	Mars E.	60	17	23	2843	58	43	51	2852	57	10	31	2862	55	37	23	2871
	Spica ♍ E.	73	37	17	2970	72	6	26	2979	70	35	47	2989	69	5	20	2997
14	SUN W.	115	45	25	3398	117	7	44	3404	118	29	56	3410	119	52	1	3416
	Aldebaran W.	73	24	33	3088	74	52	57	3093	76	21	15	3098	77	49	27	3102
	Saturn W.	55	25	0	3089	56	53	23	3094	58	21	40	3099	59	49	51	3103
	Pollux W.	29	15	4	3034	30	44	34	3039	32	13	59	3045	33	43	16	3049
	Mars E.	47	54	17	2907	46	22	7	2913	44	50	5	2918	43	18	9	2924
	Spica ♍ E.	61	35	31	3034	60	6	0	3039	58	36	36	3045	57	7	19	3050
	Antares E.	107	28	4	3030	105	58	28	3035	104	28	59	3041	102	59	37	3046

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
1	Antares W.	78	47	20	2124	80	37	42	2112	82	28	23	2100	84	19	23	2088
	Jupiter E.	25	17	46	2206	23	29	27	2194	21	40	51	2184	19	52	0	2176
	SUN E.	45	46	37	2424	44	3	37	2411	42	20	18	2398	40	36	41	2385
2	Antares W.	93	38	40	2037	95	31	16	2028	97	24	6	2021	99	17	8	2014
	SUN E.	31	54	17	2331	30	9	3	2322	28	23	36	2315	26	37	58	2307
7	SUN W.	38	2	15	2567	39	41	56	2585	41	21	12	2604	43	0	1	2623
	Saturn E.	28	47	22	2373	27	3	9	2403	25	19	38	2436	23	36	54	2472
	Pollux E.	54	51	23	2260	53	4	24	2277	51	17	50	2295	49	31	43	2313
	Regulus E.	91	30	44	2268	89	43	57	2285	87	57	35	2303	86	11	40	2320
8	SUN W.	51	7	34	2722	52	43	44	2743	54	19	27	2763	55	54	44	2783
	Pollux E.	40	47	46	2406	39	4	20	2425	37	21	21	2444	35	38	49	2463
	Regulus E.	77	28	41	2414	75	45	26	2433	74	2	38	2452	72	20	17	2471
9	SUN W.	63	44	31	2884	65	17	10	2904	66	49	24	2924	68	21	13	2943
	Pollux E.	27	12	56	2560	25	33	6	2580	23	53	43	2599	22	14	46	2618
	Regulus E.	63	55	15	2566	62	15	34	2585	60	36	19	2604	58	57	30	2623
	Mars E.	105	54	14	2436	104	11	30	2455	102	29	13	2472	100	47	21	2490
10	SUN W.	75	54	11	3038	77	23	37	3056	78	52	40	3074	80	21	21	3092
	Aldebaran W.	31	9	18	2900	32	41	37	2900	34	13	56	2902	35	46	13	2905
	Regulus E.	50	49	40	2714	49	13	19	2732	47	37	21	2750	46	1	47	2766
	Mars E.	92	24	10	2576	90	44	42	2593	89	5	38	2609	87	26	55	2626
	Spica ♃ E.	104	49	17	2700	103	12	37	2717	101	36	19	2734	100	0	24	2750
11	SUN W.	87	39	34	3174	89	6	14	3189	90	32	36	3204	91	58	40	3219
	Aldebaran W.	43	26	4	2937	44	57	36	2945	46	28	58	2954	48	0	9	2962
	Saturn W.	25	28	13	2955	26	59	22	2959	28	30	26	2964	30	1	24	2970
	Regulus E.	38	9	31	2850	36	36	8	2867	35	3	7	2883	33	30	26	2900
	Mars E.	79	18	41	2701	77	42	2	2714	76	5	41	2728	74	29	39	2741
	Spica ♃ E.	92	5	58	2826	90	32	4	2840	88	58	28	2853	87	25	9	2867
12	SUN W.	99	4	52	3286	100	29	20	3297	101	53	35	3308	103	17	37	3319
	Aldebaran W.	55	33	24	3005	57	3	30	3013	58	33	27	3021	60	3	14	3029
	Saturn W.	37	34	7	3007	39	4	11	3015	40	34	5	3022	42	3	50	3030
	Regulus E.	25	52	16	2983	24	21	42	3002	22	51	31	3021	21	21	44	3042
	Mars E.	66	33	40	2802	64	59	15	2813	63	25	4	2824	61	51	7	2834
	Spica ♃ E.	79	42	47	2928	78	11	4	2939	76	39	35	2950	75	8	19	2961
13	SUN W.	110	14	45	3367	111	37	39	3376	113	0	23	3384	114	22	58	3391
	Aldebaran W.	67	29	47	3065	68	58	40	3071	70	27	25	3077	71	56	3	3083
	Saturn W.	49	30	17	3065	50	59	9	3072	52	27	53	3078	53	56	3	3083
	Pollux W.	23	15	44	3009	24	45	46	3015	26	15	40	3022	27			
	Mars E.	54	4	27	2878	52	31	40	2886	50	59	3	2894	40			
	Spica ♃ E.	67	35	3	3005	66	4	56	3013	64	34	59	3020	6			
14	SUN W.	121	13	59	3421	122	35	52	3425	123	57	40	3430				
	Aldebaran W.	79	17	34	3107	80	45	35	3110	82	13	32	3112				
	Saturn W.	61	17	57	3107	62	45	58	3111	64	13	54	3111				
	Pollux W.	35	12	28	3054	36	41	34	3057	38	10	36	306				
	Mars E.	41	46	21	2928	40	14	38	2934	38	43	2	297				
	Spica ♃ E.	55	38	8	3055	54	9	3	3060	52	40	4	30				
	Antares E.	101	30	21	3050	100	1	10	3056	98	32	6	30				

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.
15	SUN W.	126	41	1	3437	128	2	36	3440	129	24	7	3443	130	45	35	3446
	Aldebaran W.	85	9	13	3120	86	36	58	3123	88	4	40	3125	89	32	19	3127
	Saturn W.	67	9	35	3120	68	37	20	3123	70	5	2	3124	71	32	42	3126
	Pollux W.	41	8	25	3068	42	37	14	3070	44	6	0	3073	45	34	43	3075
	Mars E.	35	40	5	2945	34	8	43	2948	32	37	25	2951	31	6	11	2953
	Spica ♃ E.	49	42	21	3071	48	13	36	3074	46	44	55	3077	45	16	17	3079
Antares E.	95	34	10	3065	94	5	18	3069	92	36	30	3070	91	7	44	3073	
16	Aldebaran W.	96	50	4	3133	98	17	34	3134	99	45	2	3134	101	12	30	3134
	Saturn W.	78	50	37	3131	80	18	9	3130	81	45	42	3130	83	13	15	3129
	Pollux W.	52	57	50	3079	54	26	25	3079	55	55	0	3079	57	23	35	3078
	Regulus W.	16	44	29	3195	18	10	44	3179	19	37	19	3165	21	4	10	3153
	Spica ♃ E.	37	53	44	3087	36	25	18	3087	34	56	53	3088	33	28	29	3088
	Antares E.	83	44	27	3078	82	15	50	3078	80	47	14	3078	79	18	37	3078
17	Saturn W.	90	31	18	3123	91	59	0	3120	93	26	45	3118	94	54	33	3116
	Pollux W.	64	46	50	3071	66	15	35	3069	67	44	22	3066	69	13	13	3064
	Regulus W.	28	21	22	3114	29	49	15	3108	31	17	15	3102	32	45	22	3096
	Spica ♃ E.	26	6	31	3088	24	38	7	3088	23	9	43	3089	21	41	20	3089
	Antares E.	71	55	17	3070	70	26	31	3068	68	57	42	3066	67	28	51	3063
18	Saturn W.	102	14	22	3100	103	42	32	3096	105	10	46	3092	106	39	5	3088
	Pollux W.	76	38	21	3047	78	7	35	3043	79	36	55	3039	81	6	19	3035
	Regulus W.	40	7	36	3069	41	36	23	3065	43	5	16	3060	44	34	15	3054
	Antares E.	60	3	39	3046	58	34	23	3043	57	5	3	3039	55	35	38	3035
	α Aquilæ E.	108	6	23	3995	106	54	38	3976	105	42	35	3957	104	30	13	3941
19	Pollux W.	88	34	45	3010	90	4	45	3006	91	34	51	3001	93	5	3	2994
	Regulus W.	52	0	53	3026	53	30	34	3020	55	0	22	3014	56	30	17	3008
	Antares E.	48	7	10	3010	46	37	10	3005	45	7	4	3000	43	36	51	2995
	α Aquilæ E.	98	24	35	3873	97	10	48	3862	95	56	49	3852	94	42	40	3843
20	Pollux W.	100	37	52	2966	102	8	48	2959	103	39	52	2953	105	11	4	2946
	Regulus W.	64	1	48	2977	65	32	30	2970	67	3	20	2964	68	34	18	2957
	Mars W.	25	25	26	2863	26	58	33	2858	28	31	46	2852	30	5	7	2846
	Antares E.	36	4	3	2966	34	33	8	2959	33	2	4	2954	31	30	54	2947
	α Aquilæ E.	88	29	51	3809	87	14	58	3806	86	0	2	3802	84	45	2	3800
21	Regulus W.	76	11	17	2923	77	43	7	2916	79	15	6	2909	80	47	14	2901
	Mars W.	37	53	48	2815	39	27	56	2808	41	2	13	2802	42	36	38	2795
	Spica ♃ W.	22	8	52	2935	23	40	27	2925	25	12	14	2916	26	44	13	2907
	Antares E.	23	53	0	2915	22	21	1	2909	20	48	53	2903	19	16	38	2896
	α Aquilæ E.	78	29	48	3803	77	14	49	3808	75	59	55	3813	74	45	6	3819
	Fomalhaut E.	105	55	33	3118	104	27	45	3109	102	59	46	3099	101	31	35	3089
22	Regulus W.	88	30	15	2864	90	3	20	2856	91	36	35	2849	93	10	0	2841
	Mars W.	50	30	54	2761	52	6	13	2754	53	41	41	2747	55	17	18	2740
	Spica ♃ W.	34	26	54	2864	35	59	59	2856	37	33	15	2847	39	6	42	2838
	α Aquilæ E.	68	33	9	3874	67	19	23	3889	66	5	52	3907	64	52	40	3927
	Fomalhaut E.	94	7	54	3046	92	38	38	3037	91	9	11	3030	89	39	35	3022
	Jupiter E.	120	9	48	2931	118	38	9	2924	117	6	20	2916	115	34	22	2907
23	Mars W.	63	17	51	2702	64	54	29	2694	66	31	17	2686	68	8	15	2678
	Spica ♃ W.	46	56	43	2795	48	31	17	2786	50	6	3	2778	51	41	0	2769

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		o	i	"	P.L. of diff.	o	i	"	P.L. of diff.	o	i	"	P.L. of diff.				
15	Sun W.	132	7	0	3447	133	28	27	3448	134	49	46	3449	136	11	7	3450
	Aldebaran W.	90	59	56	3129	92	27	30	3130	93	55	3	3132	95	22	34	3133
	Saturn W.	73	0	20	3128	74	27	56	3129	75	55	30	3129	77	23	4	3130
	Pollux W.	47	3	23	3076	48	32	2	3078	50	0	39	3078	51	29	15	3079
	Mars E.	29	34	59	2955	28	3	50	2957	26	32	44	2959	25	1	40	2960
	Spica ♀ E.	43	47	42	3081	42	19	9	3083	40	50	39	3085	39	22	11	3086
Antares E.	89	39	1	3075	88	10	21	3075	86	41	42	3077	85	13	4	3078	
16	Aldebaran W.	102	39	59	3134	104	7	27	3134	105	34	56	3133	107	2	26	3132
	Saturn W.	84	40	49	3129	86	8	24	3128	87	36	0	3126	89	3	38	3124
	Pollux W.	58	52	11	3077	60	20	49	3077	61	49	27	3075	63	18	7	3073
	Regulus W.	22	31	16	3143	23	58	33	3135	25	26	0	3127	26	53	37	3120
	Spica ♀ E.	32	0	5	3089	30	31	42	3088	29	3	18	3088	27	34	54	3089
	Antares E.	77	50	0	3076	76	21	21	3076	74	52	42	3074	73	24	0	3073
17	Saturn W.	96	22	23	3112	97	50	18	3110	99	18	15	3106	100	46	17	3104
	Pollux W.	70	42	7	3061	72	11	4	3058	73	40	5	3054	75	9	11	3051
	Regulus W.	34	13	36	3091	35	41	56	3086	37	10	23	3081	38	38	56	3075
	Spica ♀ E.	20	12	57	3091	18	44	36	3092	17	16	17	3096	15	48	2	3100
	Antares E.	65	59	56	3060	64	50	58	3056	63	1	55	3054	61	32	49	3051
18	Saturn W.	108	7	29	3085	109	35	57	3080	111	4	31	3076	112	33	10	3072
	Pollux W.	82	35	49	3031	84	5	24	3026	85	35	5	3021	87	4	52	3016
	Regulus W.	46	3	21	3048	47	32	34	3043	49	1	53	3037	50	31	20	3032
	Antares E.	54	6	8	3030	52	36	32	3026	51	6	51	3020	49	37	3	3016
	α Aquilæ E.	103	17	35	3926	102	4	42	3911	100	51	33	3897	99	38	10	3885
19	Pollux W.	94	35	23	2989	96	5	49	2983	97	36	23	2977	99	7	4	2972
	Regulus W.	58	0	20	3002	59	30	31	2996	61	0	49	2989	62	31	15	2984
	Antares E.	42	6	32	2989	40	36	5	2984	39	5	32	2977	37	34	51	2972
	α Aquilæ E.	93	28	22	3834	92	13	55	3826	90	59	20	3820	89	44	39	3814
20	Pollux W.	106	42	24	2941	108	13	51	2934	109	45	27	2927	111	17	12	2920
	Regulus W.	70	5	25	2950	71	36	40	2943	73	8	4	2937	74	39	36	2930
	Mars W.	31	38	35	2840	33	12	11	2834	34	45	55	2828	36	19	47	2821
	Antares E.	29	59	35	2941	28	28	8	2935	26	56	34	2928	25	24	51	2922
	α Aquilæ E.	83	30	c	3798	82	14	56	3798	80	59	52	3799	79	44	49	3801
21	Regulus W.	82	19	31	2894	83	51	58	2887	85	24	34	2879	86	57	20	2872
	Mars W.	44	11	12	2789	45	45	54	2782	47	20	45	2776	48	55	45	2769
	Spica ♀ W.	28	16	23	2898	29	48	44	2889	31	21	17	2881	32	54	0	2873
	Antares E.	17	44	14	2890	16	11	42	2884	14	39	3	2879	13	6	17	2873
	α Aquilæ E.	73	30	23	3827	72	15	49	3836	71	1	24	3847	69	47	10	3859
	Fomalhaut E.	100	3	12	3081	98	34	39	3071	97	5	54	3063	95	36	59	3055
22	Regulus W.	94	43	35	2832	96	17	21	2824	97	51	17	281				2808
	Mars W.	56	53	5	2733	58	29	1	2725	60	5	8					2710
	Spica ♀ W.	40	40	20	2830	42	14	9	2821	43	48						2804
	α Aquilæ E.	63	39	48	3949	62	27	18	3974	61	15						4033
	Fomalhaut E.	88	9	50	3014	86	39	54	3007	85	9						2993
	Jupiter E.	114	2	12	2900	112	29	53	2891	110	5						2874
23	Mars W.	69	45	25	2669	71	22	46	2661	73							642
	Spica ♀ W.	53	16	9	2760	54	51	30	2750	56							73

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .						
		P.L. of diff.			P.L. of diff.			P.L. of diff.			P.L. of diff.						
		°	'	"	°	'	"	°	'	"	°	'	"				
23	α Aquilæ E.	58	52	28	4067	57	41	54	4105	56	31	57	4146	55	22	39	4192
	Fomalhaut E.	82	9	14	2985	80	38	42	2978	79	8	2	2973	77	37	15	2966
	α Pegasi E.	103	9	39	3142	101	42	20	3129	100	14	46	3117	98	46	57	3105
	Jupiter E.	107	51	49	2866	106	18	46	2857	104	45	32	2848	103	12	6	2838
24	Mars W.	76	15	57	2635	77	54	4	2627	79	32	22	2617	81	10	54	2609
	Spica ♀ W.	59	38	47	2722	61	14	58	2712	62	51	22	2702	64	27	59	2693
	Antares W.	13	44	48	2726	15	20	53	2715	16	57	13	2704	18	33	47	2693
	Fomalhaut E.	70	1	22	2938	68	29	51	2933	66	58	14	2929	65	26	32	2926
	α Pegasi E.	91	24	27	3053	89	55	20	3043	88	26	0	3034	86	56	29	3025
	Jupiter E.	95	21	58	2792	93	47	19	2782	92	12	28	2772	90	37	23	2763
	Venus E.	109	30	28	3149	108	3	18	3138	106	35	55	3128	105	8	20	3118
	SUN E.	132	45	29	3059	131	16	29	3048	129	47	16	3038	128	17	50	3027
25	Mars W.	89	26	41	2561	91	6	30	2551	92	46	33	2540	94	26	50	2530
	Spica ♀ W.	72	34	25	2641	74	12	24	2630	75	50	38	2620	77	29	6	2608
	Antares W.	26	40	14	2640	28	18	15	2629	29	56	30	2618	31	35	1	2607
	Fomalhaut E.	57	47	4	2915	56	15	4	2916	54	43	5	2917	53	11	7	2919
	α Pegasi E.	79	26	19	2987	77	55	50	2980	76	25	12	2975	74	54	28	2970
	Jupiter E.	82	38	40	2710	81	2	14	2699	79	25	33	2688	77	48	37	2677
	Venus E.	97	47	4	3061	96	18	7	3050	94	48	56	3038	93	19	30	3026
	SUN E.	120	47	19	2972	119	16	31	2961	117	45	29	2949	116	14	12	2938
26	Mars W.	102	51	50	2477	104	33	35	2467	106	15	35	2455	107	57	51	2444
	Spica ♀ W.	85	45	15	2552	87	25	16	2540	89	5	33	2529	90	46	6	2517
	Antares W.	39	51	22	2551	41	31	25	2538	43	11	45	2527	44	52	21	2515
	Fomalhaut E.	45	32	38	2954	44	1	28	2968	42	30	35	2985	41	0	3	3005
	α Pegasi E.	67	19	21	2953	65	48	9	2952	64	16	56	2952	62	45	43	2954
	Jupiter E.	69	40	12	2620	68	1	44	2608	66	23	0	2596	64	43	59	2584
	Venus E.	85	48	35	2964	84	17	37	2952	82	46	24	2939	81	14	54	2925
	SUN E.	108	34	1	2876	107	1	12	2864	105	28	7	2852	103	54	46	2839
27	Antares W.	53	19	33	2454	55	1	51	2442	56	44	26	2430	58	27	18	2417
	α Pegasi E.	55	10	37	2982	53	40	1	2993	52	9	40	3007	50	39	36	3024
	Jupiter E.	56	24	47	2523	54	44	6	2510	53	3	7	2497	51	21	50	2485
	Venus E.	73	33	14	2859	72	0	3	2846	70	26	35	2833	68	52	50	2819
	SUN E.	96	3	50	2773	94	28	47	2761	92	53	28	2747	91	17	50	2734
28	Antares W.	67	6	8	2355	68	50	48	2343	70	35	45	2331	72	21	0	2318
	Jupiter E.	42	51	3	2422	41	8	0	2410	39	24	40	2398	37	41	2	2385
	α Pegasi E.	43	15	58	3168	41	49	11	3214	40	23	18	3267	38	58	28	3329
	Venus E.	60	59	37	2751	59	24	5	2738	57	48	16	2724	56	12	8	2711
	SUN E.	83	15	19	2667	81	37	55	2654	80	0	13	2641	78	22	14	2628
29	Antares W.	81	11	42	2259	82	58	42	2247	84	45	59	2236	86	33	33	2225
	Jupiter E.	28	58	32	2326	27	13	11	2315	25	27	34	2305	23	41	42	2294
	Venus E.	48	7	9	2646	46	29	17	2635	44	51	9	2622	43	12	44	2611
	SUN E.	70	7	54	2564	68	28	10	2552	66	48	9	2540	65	7	52	2528
30	Antares W.	95	35	23	2173	97	24	31	2164	99	13	52	2155	101	3	27	2147
	α Aquilæ W.	53	17	38	3646	54	35	23	3570	55	54	30	3501	57	14	53	3437
	Venus E.	34	56	45	2556	33	16	49	2546	31	36	39	2536	29	56	16	2527
	SUN E.	56	42	27	2474	55	0	37	2464	53	18	33	2455	51	36	16	2446

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L.	XV ^h .	P.L.	XVIII ^h .	P.L.	XXI ^h .	P.L.
			of diff.		of diff.		of diff.		of diff.
23	α Aquilæ E.	54 14 5	4242	53 6 18	4297	51 59 23	4358	50 53 24	4427
	Fomalhaut E.	76 6 19	2959	74 35 15	2954	73 4 4	2948	71 32 46	2943
	α Pegasi E.	97 18 54	3094	95 50 37	3083	94 22 6	3073	92 53 23	3062
	Jupiter E.	101 38 28	2830	100 4 39	2820	98 30 37	2811	96 56 24	2802
24	Mars W.	82 49 37	2599	84 28 34	2590	86 7 43	2580	87 47 5	2570
	Spica μ W.	66 4 49	2683	67 41 52	2672	69 19 9	2662	70 56 40	2652
	Antares W.	20 10 36	2683	21 47 39	2672	23 24 56	2661	25 2 28	2651
	Fomalhaut E.	63 54 46	2922	62 22 55	2919	60 51 0	2917	59 19 3	2916
	α Pegasi E.	85 26 47	3016	83 56 54	3008	82 26 51	3001	80 56 39	2994
	Jupiter E.	89 2 6	2752	87 26 35	2742	85 50 51	2731	84 14 52	2721
	Venus E.	103 40 32	3105	102 12 30	3096	100 44 15	3084	99 15 46	3073
	SUN E.	126 48 11	3017	125 18 19	3006	123 48 13	2994	122 17 53	2983
25	Mars W.	96 7 21	2520	97 48 6	2510	99 29 6	2499	101 10 21	2489
	Spica μ W.	79 7 50	2598	80 46 48	2586	82 26 2	2575	84 5 31	2564
	Antares W.	33 13 46	2596	34 52 47	2585	36 32 3	2574	38 11 34	2562
	Fomalhaut E.	51 39 12	2923	50 7 22	2928	48 35 38	2934	47 4 2	2943
	α Pegasi E.	73 23 37	2965	71 52 40	2960	70 21 37	2957	68 50 31	2954
	Jupiter E.	76 11 27	2666	74 34 1	2654	72 56 20	2643	71 18 24	2632
	Venus E.	91 49 49	3014	90 19 54	3001	88 49 43	2989	87 19 17	2977
	SUN E.	114 42 41	2925	113 10 54	2913	111 38 52	2901	110 6 34	2889
26	Mars W.	109 40 23	2433	111 23 10	2421	113 6 14	2410	114 49 34	2399
	Spica μ W.	92 26 55	2505	94 8 1	2493	95 49 24	2481	97 31 4	2469
	Antares W.	46 33 14	2503	48 14 23	2491	49 55 49	2479	51 37 32	2466
	Fomalhaut E.	39 29 56	3030	38 0 20	3059	36 31 20	3094	35 3 3	3137
	α Pegasi E.	61 14 32	2956	59 43 24	2959	58 12 20	2965	56 41 24	2973
	Jupiter E.	63 4 42	2572	61 25 9	2560	59 45 19	2548	58 5 12	2535
	Venus E.	79 43 7	2912	78 11 4	2900	76 38 45	2886	75 6 8	2873
	SUN E.	102 21 9	2825	100 47 14	2813	99 13 3	2800	97 38 35	2787
27	Antares W.	60 10 29	2405	61 53 57	2392	63 37 43	2380	65 21 47	2368
	α Pegasi E.	49 9 53	3044	47 40 35	3068	46 11 46	3096	44 43 32	3129
	Jupiter E.	49 40 16	2472	47 58 24	2460	46 16 15	2448	44 33 48	2435
	Venus E.	67 18 47	2805	65 44 26	2791	64 9 47	2778	62 34 51	2765
	SUN E.	89 41 55	2721	88 5 43	2707	86 29 12	2694	84 52 24	2681
28	Antares W.	74 6 33	2306	75 52 24	2294	77 38 32	2282	79 24 58	2270
	Jupiter E.	35 57 6	2373	34 12 53	2362	32 28 23	2350	30 43 36	2338
	α Pegasi E.	37 34 50	3402	36 12 36	3488	34 51 58	3589	33 33 11	3707
	Venus E.	54 35 43	2698	52 59 1	2685	51 22 1	2672	49 11 44	2659
	SUN E.	76 43 57	2615	75 5 22	2602	73 26 30	2590		2577
29	Antares W.	88 21 24	2214	90 9 30	2203	91 57 53	2191		33
	Jupiter E.	21 55 34	2285	20 9 12	2275	18 22 36	2261		
	Venus E.	41 34 4	2599	39 55 7	2587	38 15 54			
	SUN E.	63 27 18	2517	61 46 28	2506	60 5 22			
30	Antares W.	102 53 15	2138	104 43 16	2131	106 33 2			
	α Aquilæ W.	58 36 28	3378	59 59 9	3325	61 22 5			
	Venus E.	28 15 41	2520	26 34 55	2511	24 53 1			
	SUN E.	49 53 46	2437	48 11 4	2429	46 28 1			

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 16^h 30^m, MEAN TIME.

Day of the Month.	West.	East.
1		·2 ·1 ○ ·3 ·4
2		○ 1 ·2 3 ·4
3		·1 ○ 2 ·3 4 ·
4		·2 ·3 ○ 1 ·4
5	·1 ●	·3 ·4 ○ ·1 ○
6	1 ·○	·3 ·4 · ○ 2 ·
7		4 · 2 · ○ 3 ·1
8	4 ·	·2 1 · ○ ·3
9	·4	○ 1 ·2 3 ·
10	·4	·1 ○ 2 ·3
11	·4	·2 ·3 · ○ 1 ·
12		3 ·4 ·1 · ○
13		·3 ·4 · ○ 2 · ○ 1 ·
14	·3 ●	○ ·1 ·4 ○ 2 ·
15		·2 1 · ○ ·3 ·4
16		○ ·2 ·1 3 ·4
17		·1 ○ 2 ·3 ·4
18		·2 ·3 · ○ 1 ·4
19		3 · ·1 · ○ 4 ·
20		·3 · ○ 1 ·2 4 ·
21		·3 ○ 2 ·4 · ● 1 ·
22	4 ·○	·2 1 · ○ ·3
23		4 · ○ ·2 ·1 3 ·
24		4 · 1 · ○ 2 ·3 ·
25	4 ·	·2 ·3 · ○ 1 ·
26	·4	3 · ·2 ·1 ○
27	·4	·3 · ○ 1 ·2
28	·4	·3 ·1 ○ 2 ·
29		·4 ·2 · ○ ·3 ○ 1 ·
30	·4 ●	○ ·1 ·3 · ● 2 ·

This Table represents, at 16^h 30^m after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^d .176271. Days.	From Mean Noon of January 1.	
	Logarithm of						Day of the Year.	Fraction of the Year.
	A	B	C	D				
1	-1.2623	-0.6437	+8.9840	-0.9445	23 16 3.89	10	91	.249
2	1.2605	0.6762	8.9940	0.9442	23 12 7.98	11	92	.252
3	1.2587	0.7063	9.0038	0.9440	23 8 12.07	12	93	.255
4	-1.2567	-0.7343	+9.0135	-0.9437	23 4 16.16	13	94	.257
5	1.2546	0.7605	9.0230	0.9434	23 0 20.25	14	95	.260
6	1.2523	0.7851	9.0325	0.9430	22 56 24.34	15	96	.263
7	-1.2499	-0.8082	+9.0417	-0.9427	22 52 28.44	16	97	.266
8	1.2474	0.8300	9.0508	0.9423	22 48 32.53	17	98	.268
9	1.2447	0.8506	9.0599	0.9419	22 44 36.62	18	99	.271
10	-1.2419	-0.8702	+9.0689	-0.9414	22 40 40.71	19	100	.274
11	1.2389	0.8888	9.0777	0.9410	22 36 44.80	20	101	.277
12	1.2358	0.9064	9.0864	0.9405	22 32 48.89	21	102	.279
13	-1.2325	-0.9233	+9.0950	-0.9400	22 28 52.99	22	103	.282
14	1.2291	0.9394	9.1036	0.9394	22 24 57.08	23	104	.285
15	1.2256	0.9548	9.1120	0.9389	22 21 1.17	24	105	.287
16	-1.2218	-0.9695	+9.1203	-0.9383	22 17 5.26	25	106	.290
17	1.2180	0.9837	9.1286	0.9377	22 13 9.35	26	107	.293
18	1.2139	0.9972	9.1368	0.9371	22 9 13.44	27	108	.296
19	-1.2097	-1.0102	+9.1450	-0.9365	22 5 17.53	28	109	.298
20	1.2054	1.0227	9.1530	0.9358	22 1 21.62	29	110	.301
21	1.2008	1.0347	9.1610	0.9352	21 57 25.71	30	111	.304
22	-1.1961	-1.0463	+9.1689	-0.9345	21 53 29.81	31	112	.307
23	1.1912	1.0575	9.1767	0.9338	21 49 33.90	32	113	.309
24	1.1862	1.0682	9.1845	0.9331	21 45 37.99	33	114	.312
25	-1.1809	-1.0785	+9.1922	-0.9324	21 41 42.08	34	115	.315
26	1.1755	1.0885	9.1999	0.9317	21 37 46.17	35	116	.318
27	1.1699	1.0982	9.2075	0.9309	21 33 50.26	36	117	.320
28	-1.1641	-1.1075	+9.2151	-0.9302	21 29 54.35	37	118	.323
29	1.1580	1.1164	9.2226	0.9294	21 25 58.44	38	119	.326
30	1.1518	1.1251	9.2300	0.9287	21 22 2.53	39	120	.329
31	-1.1454	-1.1335	+9.2374	-0.9279	21 18 6.62	40	121	.331

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		h m s	s	° ' "	"	m s	m s	s
Thur.	1	2 35 18.29	9.563	N.15 13 16.5	44.79	1 6.07	3 4.62	0.293
Frid.	2	2 39 7.79	9.587	15 31 11.5	44.45	1 6.15	3 11.66	0.270
Sat.	3	2 42 57.85	9.610	15 48 51.1	43.50	1 6.23	3 18.14	0.246
Sun.	4	2 46 48.48	9.634	16 6 15.1	42.83	1 6.31	3 24.05	0.223
Mon.	5	2 50 39.66	9.657	16 23 23.1	42.15	1 6.40	3 29.41	0.200
Tues.	6	2 54 31.42	9.680	16 40 14.8	41.46	1 6.48	3 34.20	0.177
Wed.	7	2 58 23.73	9.703	16 56 49.9	40.75	1 6.56	3 38.43	0.153
Thur.	8	3 2 16.61	9.727	17 13 7.9	40.03	1 6.64	3 42.09	0.130
Frid.	9	3 6 10.05	9.750	17 29 8.7	39.30	1 6.72	3 45.20	0.106
Sat.	10	3 10 4.05	9.773	17 44 52.0	38.56	1 6.81	3 47.75	0.083
Sun.	11	3 13 58.61	9.796	18 0 17.2	37.80	1 6.89	3 49.75	0.060
Mon.	12	3 17 53.72	9.820	18 15 24.3	37.03	1 6.97	3 51.19	0.037
Tues.	13	3 21 49.39	9.843	18 30 13.0	36.25	1 7.05	3 52.08	0.013
Wed.	14	3 25 45.61	9.866	18 44 42.9	35.46	1 7.14	3 52.40	0.009
Thur.	15	3 29 42.39	9.889	18 58 53.8	34.65	1 7.22	3 52.18	0.033
Frid.	16	3 33 39.73	9.912	19 12 45.5	33.84	1 7.30	3 51.40	0.056
Sat.	17	3 37 37.62	9.935	19 26 17.6	33.02	1 7.38	3 50.08	0.078
Sun.	18	3 41 36.06	9.958	19 39 30.0	32.18	1 7.46	3 48.20	0.101
Mon.	19	3 45 35.05	9.981	19 52 22.4	31.34	1 7.54	3 45.77	0.124
Tues.	20	3 49 34.60	10.004	20 4 54.6	30.49	1 7.62	3 42.80	0.147
Wed.	21	3 53 34.68	10.026	20 17 6.2	29.63	1 7.69	3 39.28	0.170
Thur.	22	3 57 35.31	10.049	20 28 57.2	28.76	1 7.77	3 35.21	0.193
Frid.	23	4 1 36.49	10.071	20 40 27.3	27.87	1 7.84	3 30.60	0.214
Sat.	24	4 5 38.20	10.093	20 51 36.2	26.98	1 7.91	3 25.47	0.236
Sun.	25	4 9 40.42	10.115	21 2 23.7	26.08	1 7.98	3 19.81	0.257
Mon.	26	4 13 43.17	10.136	21 12 49.6	25.17	1 8.05	3 13.64	0.278
Tues.	27	4 17 46.41	10.156	21 22 53.6	24.25	1 8.12	3 6.98	0.298
Wed.	28	4 21 50.15	10.176	21 32 35.5	23.32	1 8.18	2 59.82	0.318
Thur.	29	4 25 54.37	10.195	21 41 55.2	22.38	1 8.24	2 52.18	0.338
Frid.	30	4 29 59.05	10.213	21 50 52.3	21.43	1 8.30	2 44.08	0.356
Sat.	31	4 34 4.17	10.231	21 59 26.7	20.48	1 8.36	2 35.53	0.373
Sun.	32	4 38 9.72		N.22 7 38.2		1 8.42	2 26.57	

Time of the Semidiameter passing may be found by subtracting 0'.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
	Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
	h m s	° ' "	' "	m s	h m s
r. 1	2 35 18.78	N.15 13 18.8	15 53.8	3 4.64	2 38 23.42
l. 2	2 39 8.30	15 31 13.8	15 53.6	3 11.68	2 42 19.98
3	2 42 58.38	15 48 53.5	15 53.3	3 18.15	2 46 16.53
4	2 46 49.02	16 6 17.6	15 53.1	3 24.07	2 50 13.09
l. 5	2 50 40.22	16 23 25.6	15 52.9	3 29.42	2 54 9.64
s. 6	2 54 31.99	16 40 17.3	15 52.6	3 34.21	2 58 6.20
7	2 58 24.32	16 56 52.3	15 52.4	3 38.44	3 2 2.76
r. 8	3 2 17.21	17 13 10.4	15 52.2	3 42.10	3 5 59.31
l. 9	3 6 10.66	17 29 11.2	15 52.0	3 45.21	3 9 55.87
10	3 10 4.67	17 44 54.4	15 51.8	3 47.76	3 13 52.43
11	3 13 59.23	18 0 19.7	15 51.6	3 49.75	3 17 48.98
12	3 17 54.35	18 15 26.7	15 51.4	3 51.19	3 21 45.54
s. 13	3 21 50.02	18 30 15.3	15 51.2	3 52.08	3 25 42.10
l. 14	3 25 46.25	18 44 45.2	15 51.0	3 52.40	3 29 38.65
r. 15	3 29 43.03	18 58 56.1	15 50.8	3 52.18	3 33 35.21
16	3 33 40.37	19 12 47.7	15 50.6	3 51.40	3 37 31.77
17	3 37 38.25	19 26 19.7	15 50.4	3 50.08	3 41 28.33
18	3 41 36.69	19 39 32.1	15 50.2	3 48.19	3 45 24.88
19	3 45 35.68	19 52 24.4	15 50.0	3 45.76	3 49 21.44
s. 20	3 49 35.21	20 4 56.4	15 49.9	3 42.79	3 53 18.00
l. 21	3 53 35.29	20 17 8.1	15 49.7	3 39.27	3 57 14.56
r. 22	3 57 35.92	20 28 59.0	15 49.6	3 35.19	4 1 11.11
l. 23	4 1 37.08	20 40 28.9	15 49.4	3 30.59	4 5 7.67
24	4 5 38.77	20 51 37.7	15 49.3	3 25.46	4 9 4.23
25	4 9 40.99	21 2 25.1	15 49.1	3 19.80	4 13 0.79
l. 26	4 13 43.71	21 12 50.9	15 49.0	3 13.63	4 16 57.34
s. 27	4 17 46.94	21 22 54.8	15 48.8	3 6.96	4 20 53.90
28	4 21 50.66	21 32 36.7	15 48.6	2 59.80	4 24
r. 29	4 25 54.86	21 41 56.2	15 48.5	2 52.16	4 2
l. 30	4 29 59.52	21 50 53.3	15 48.3	2 44.06	4
31	4 34 4.62	21 59 27.6	15 48.2	2 35.51	.
32	4 38 10.14	N.22 7 39.0	15 48.0	2 26.55	

* The Semidiameter for Apparent Noon may be assumed the same as that for

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.	Noon.	Noon.	Midnight.	Noon.	Midnight.
1	41 15 44.4	S. 0° 53'	0.0036301	16 27.7	16 29.8	60 24.6	60 32.2
2	42 13 53.8	0.40	0.0037381	16 30.9	16 31.0	60 36.3	60 36.6
3	43 12 1.7	0.26	0.0038446	16 30.0	16 27.9	60 32.9	60 25.3
4	44 10 7.9	0.13	0.0039493	16 24.8	16 20.7	60 13.9	59 58.7
5	45 8 12.5	S. 0.01	0.0040521	16 15.6	16 9.9	59 40.3	59 19.2
6	46 6 15.5	N. 0.11	0.0041531	16 3.5	15 56.7	58 55.9	58 30.9
7	47 4 16.7	0.20	0.0042524	15 49.6	15 42.4	58 4.9	57 38.3
8	48 2 16.2	0.26	0.0043499	15 35.2	15 28.2	57 11.9	56 46.2
9	49 0 14.0	0.29	0.0044458	15 21.5	15 15.1	56 21.5	55 58.2
10	49 58 9.9	0.30	0.0045400	15 9.3	15 4.0	55 36.8	55 17.4
11	50 56 3.9	0.28	0.0046326	14 59.3	14 55.3	55 0.3	54 45.6
12	51 53 56.1	0.23	0.0047237	14 52.0	14 49.3	54 33.4	54 23.6
13	52 51 46.5	0.15	0.0048135	14 47.4	14 46.1	54 16.4	54 11.6
14	53 49 35.3	N. 0.04	0.0049021	14 45.4	14 45.4	54 9.3	54 9.3
15	54 47 22.3	S. 0.08	0.0049894	14 46.0	14 47.2	54 11.5	54 15.7
16	55 45 7.7	0.21	0.0050756	14 48.8	14 51.0	54 21.8	54 29.7
17	56 42 51.5	0.34	0.0051609	14 53.6	14 56.5	54 39.1	54 49.8
18	57 40 33.8	0.47	0.0052453	14 59.7	15 3.2	55 1.7	55 14.5
19	58 38 14.7	0.59	0.0053286	15 6.9	15 10.8	55 28.2	55 42.4
20	59 35 54.3	0.69	0.0054109	15 14.8	15 18.8	55 57.0	56 11.8
21	60 33 32.6	0.76	0.0054922	15 22.9	15 27.0	56 26.8	56 41.9
22	61 31 9.8	0.82	0.0055724	15 31.1	15 35.1	56 56.9	57 11.7
23	62 28 46.0	0.84	0.0056516	15 39.1	15 43.1	57 26.4	57 40.9
24	63 26 21.1	0.83	0.0057296	15 47.0	15 50.8	57 55.1	58 9.0
25	64 23 55.4	0.79	0.0058062	15 54.4	15 58.0	58 22.5	58 35.6
26	65 21 28.7	0.73	0.0058812	16 1.4	16 4.6	58 48.1	58 59.9
27	66 19 1.1	0.63	0.0059546	16 7.6	16 10.3	59 10.9	59 20.9
28	67 16 32.7	0.52	0.0060262	16 12.7	16 14.7	59 29.7	59 36.9
29	68 14 3.6	0.39	0.0060958	16 16.2	16 17.2	59 42.4	59 45.9
30	69 11 33.7	0.26	0.0061633	16 17.5	16 17.2	59 47.1	59 45.9
31	70 9 2.9	S. 0.12	0.0062286	16 16.1	16 14.3	59 42.0	59 35.5
32	71 6 31.3	N. 0.01	0.0062917	16 11.8	16 8.6	59 26.3	59 14.4

MEAN TIME.																
Day of the Week.	Day of the Month.	THE MOON'S														
		Longitude.				Latitude.				Age.	Meridian Passage.					
		Noon.		Midnight.		Noon.		Midnight.		Noon.						
°	'	"	°	'	"	°	'	"	°	'	"	d	h	m		
Thur.	1	35	16	55.3	5	39	27.8	S. 2	19	29.9	S. 1	41	48.7	26.3	22	3.4
Frid.	2	13	3	30.8	20	28	14.9	S. 1	2	17.4	S. 0	21	40.6	27.3	22	54.5
Sat.	3	27	52	47.4	35	16	12.4	N. 0	19	16.1	N. 0	59	45.8	28.3	23	47.9
Sun.	4	42	37	34.8	49	56	1.2	1	39	2.8	2	16	24.7	29.3		♄
Mon.	5	57	10	41.1	64	20	50.2	2	51	12.8	3	22	54.9	0.9	0	44.3
Tues.	6	71	25	50.4	78	25	12.2	3	51	4.5	4	15	21.9	1.9	1	43.2
Wed.	7	85	18	33.1	92	5	41.4	4	35	33.9	4	51	33.2	2.9	2	43.3
Thur.	8	98	46	32.7	105	21	10.9	5	3	17.6	5	10	50.0	3.9	3	42.3
Frid.	9	111	49	47.4	118	12	39.3	5	14	15.4	5	13	43.3	4.9	4	38.3
Sat.	10	124	30	10.2	130	42	47.6	5	9	24.0	5	1	29.0	5.9	5	29.9
Sun.	11	136	51	2.3	142	55	27.7	4	50	11.8	4	35	45.3	6.9	6	17.3
Mon.	12	148	56	39.2	154	55	13.3	4	18	23.3	3	58	19.8	7.9	7	0.9
Tues.	13	160	51	46.2	166	46	55.0	3	35	48.6	3	11	4.3	8.9	7	41.8
Wed.	14	172	41	15.4	178	35	22.6	2	44	21.4	2	15	54.7	9.9	8	21.1
Thur.	15	184	29	50.1	190	25	9.7	1	45	59.7	1	14	53.4	10.9	8	59.9
Frid.	16	196	21	50.9	202	20	20.8	N. 0	42	52.2	N. 0	10	14.6	11.9	9	39.5
Sat.	17	208	21	4.3	214	24	22.7	S. 0	22	40.3	S. 0	55	31.8	12.9	10	21.0
Sun.	18	220	30	34.8	226	39	55.6	1	27	58.6	1	59	38.5	13.9	11	5.3
Mon.	19	232	52	36.7	239	8	47.2	2	30	8.2	2	59	4.3	14.9	11	53.3
Tues.	20	245	28	32.5	251	51	54.8	3	26	2.9	3	50	41.1	15.9	12	45.5
Wed.	21	258	18	53.9	264	49	27.5	4	12	35.6	4	31	24.9	16.9	13	41.3
Thur.	22	271	23	31.0	278	0	59.1	4	46	49.5	4	58	32.1	17.9	14	39.3
Frid.	23	284	41	44.4	291	25	39.5	5	6	17.0	5	9	52.9	18.9	15	37.6
Sat.	24	298	12	36.2	305	2	26.9	5	9	10.7	5	4	5.7	19.9	16	34.1
Sun.	25	311	55	4.0	318	50	20.0	4	54	36.8	4	40	47.3	20.9	17	27.8
Mon.	26	325	48	7.4	332	48	19.1	4	22	44.7	4	0	40.6	21.9	18	18.8
Tues.	27	339	50	46.9	346	55	22.3	3	34	51.0	3	5	36.7	22.9		8
Wed.	28	354	1	54.8	1	10	12.0	2	33	22.7	1	58	37.2	23.9		
Thur.	29	8	19	58.7	15	30	56.2	1	21	53.2	S. 0	43	46.4	24.9		
Frid.	30	22	42	42.2	29	54	50.5	S. 0	4	54.9	N. 0	34	1.4	25.9		
Sat.	31	37	6	50.5	44	18	8.4	N. 1	12	22.0	1	49	27.7	26.9		
Sun.	32	51	28	7.7	58	36	10.0	N. 2	24	38.7	N. 2	57	21.1	27.9		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^s .	Hour.	Right Ascension.	Declination.
<i>THURSDAY 1.</i>				<i>SATURDAY 3.</i>		
	h m s	° ' "	"		h m s	N. 11 ° ' "
0	23 57 24.03	S. 2 48 59.8	174.52	0	1 43 4.73	11 11 44.2
1	23 59 34.22	2 31 32.7	174.74	1	1 45 20.67	11 18 9.0
2	0 1 44.41	2 14 4.2	174.94	2	1 47 36.83	11 34 29.7
3	0 3 54.61	1 56 34.5	175.13	3	1 49 53.23	11 50 46.2
4	0 6 4.83	1 39 3.8	175.29	4	1 52 9.86	12 6 58.3
5	0 8 15.07	1 21 32.0	175.44	5	1 54 26.72	12 23 5.9
6	0 10 25.33	1 3 59.4	175.57	6	1 56 43.83	12 39 8.9
7	0 12 35.62	0 46 25.9	175.68	7	1 59 1.18	12 55 7.2
8	0 14 45.95	0 28 51.8	175.78	8	2 1 18.78	13 11 0.7
9	0 16 56.32	S. 0 11 17.1	175.86	9	2 3 36.62	13 26 49.2
10	0 19 6.73	N. 0 6 18.0	175.91	10	2 5 54.72	13 42 32.7
11	0 21 17.19	0 23 53.5	175.95	11	2 8 13.07	13 58 11.0
12	0 23 27.71	0 41 29.2	175.98	12	2 10 31.68	14 13 44.1
13	0 25 38.29	0 59 5.1	175.98	13	2 12 50.55	14 29 11.7
14	0 27 48.94	1 16 41.0	175.97	14	2 15 9.68	14 44 33.8
15	0 29 59.65	1 34 16.8	175.93	15	2 17 29.07	14 59 50.3
16	0 32 10.44	1 51 52.4	175.88	16	2 19 48.73	15 15 1.1
17	0 34 21.32	2 9 27.7	175.81	17	2 22 8.66	15 30 5.9
18	0 36 32.28	2 27 2.5	175.72	18	2 24 28.86	15 45 4.8
19	0 38 43.33	2 44 36.8	175.61	19	2 26 49.33	15 59 57.7
20	0 40 54.47	3 2 10.5	175.48	20	2 29 10.07	16 14 44.3
21	0 43 5.72	3 19 43.4	175.34	21	2 31 31.09	16 29 24.6
22	0 45 17.07	3 37 15.4	175.17	22	2 33 52.38	16 43 58.5
23	0 47 28.53	N. 3 54 46.5	174.99	23	2 36 13.95	N. 16 58 25.9
<i>FRIDAY 2.</i>				<i>SUNDAY 4.</i>		
0	0 49 40.11	N. 4 12 16.4	174.78	0	2 38 35.80	N. 17 12 46.6
1	0 51 51.81	4 29 45.1	174.56	1	2 40 57.93	17 27 0.6
2	0 54 3.63	4 47 12.5	174.32	2	2 43 20.34	17 41 7.7
3	0 56 15.58	5 4 38.4	174.06	3	2 45 43.03	17 55 7.9
4	0 58 27.67	5 22 2.7	173.78	4	2 48 6.00	18 9 1.0
5	1 0 39.90	5 39 25.4	173.48	5	2 50 29.25	18 22 46.9
6	1 2 52.27	5 56 46.3	173.16	6	2 52 52.78	18 36 25.6
7	1 5 4.79	6 14 5.3	172.83	7	2 55 16.59	18 49 56.8
8	1 7 17.46	6 31 22.3	172.47	8	2 57 40.69	19 3 20.5
9	1 9 30.29	6 48 37.1	172.10	9	3 0 5.06	19 16 36.7
10	1 11 43.29	7 5 49.7	171.70	10	3 2 29.72	19 29 45.1
11	1 13 56.45	7 22 59.9	171.29	11	3 4 54.66	19 42 45.8
12	1 16 9.79	7 40 7.6	170.86	12	3 7 19.87	19 55 38.5
13	1 18 23.30	7 57 12.7	170.40	13	3 9 45.36	20 8 23.2
14	1 20 36.99	8 14 15.2	169.93	14	3 12 11.13	20 20 59.9
15	1 22 50.87	8 31 14.8	169.44	15	3 14 37.18	20 33 28.3
16	1 25 4.93	8 48 11.4	168.93	16	3 17 3.50	20 45 48.4
17	1 27 19.19	9 5 4.9	168.40	17	3 19 30.10	20 58 0.2
18	1 29 33.64	9 21 55.3	167.85	18	3 21 56.96	21 10 3.4
19	1 31 48.30	9 38 42.4	167.28	19	3 24 24.09	21 21 58.1
20	1 34 3.16	9 55 26.1	166.69	20	3 26 51.49	21 33 44.1
21	1 36 18.23	10 12 6.2	166.08	21	3 29 19.15	21 45 21.4
22	1 38 33.51	10 28 42.7	165.45	22	3 31 47.08	21 56 49.8
23	1 40 49.01	10 45 15.4	164.80	23	3 34 15.26	22 8 9.2
24	1 43 4.73	N. 11 1 44.2		24	3 36 43.69	N. 22 19 19.7

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>MONDAY 5.</i>				<i>WEDNESDAY 7.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	3 36 43.69	N.22 19 19.7	110.23	0	5 38 49.05	N.27 58 0.8	26.73
1	3 39 12.38	22 30 21.1	108.69	1	5 41 23.00	28 0 41.2	24.91
2	3 41 41.32	22 41 13.2	107.15	2	5 43 56.86	28 3 10.6	23.09
3	3 44 10.51	22 51 56.1	105.59	3	5 46 30.63	28 5 29.1	21.27
4	3 46 39.94	23 2 29.7	104.02	4	5 49 4 30	28 7 36.8	19.46
5	3 49 9.60	23 12 53.8	102.44	5	5 51 37.86	28 9 33.5	17.65
6	3 51 39.50	23 23 8.4	100.84	6	5 54 11.31	28 11 19.4	15.85
7	3 54 9.63	23 33 13.5	99.23	7	5 56 44.63	28 12 54.5	14.05
8	3 56 39.99	23 43 8.9	97.61	8	5 59 17.81	28 14 18.8	12.25
9	3 59 10.56	23 52 54.5	95.98	9	6 1 50.84	28 15 32.3	10.46
10	4 1 41.35	24 2 30.4	94.34	10	6 4 23.73	28 16 35.1	8.67
11	4 4 12.36	24 11 56.4	92.68	11	6 6 56.46	28 17 27.1	6.89
12	4 6 43.57	24 21 12.5	91.01	12	6 9 29.01	28 18 8.5	5.12
13	4 9 14.98	24 30 18.6	89.34	13	6 12 1.38	28 18 39.2	3.35
14	4 11 46.59	24 39 14.6	87.65	14	6 14 33.57	28 18 59.3	1.59
15	4 14 18.39	24 48 0.5	85.96	15	6 17 5.57	28 19 8.9	0.16
16	4 16 50.37	24 56 36.3	84.25	16	6 19 37.36	28 19 7.9	1.91
17	4 19 22.53	25 5 1.8	82.54	17	6 22 8.94	28 18 56.4	3.65
18	4 21 54.86	25 13 17.0	80.81	18	6 24 40.30	28 18 34.6	5.38
19	4 24 27.35	25 21 21.8	79.08	19	6 27 11.44	28 18 2.3	7.10
20	4 27 0.01	25 29 16.3	77.34	20	6 29 42.34	28 17 19.7	8.82
21	4 29 32.82	25 37 0.4	75.59	21	6 32 13.00	28 16 26.8	10.52
22	4 32 5.77	25 44 33.9	73.84	22	6 34 43.41	28 15 23.6	12.22
23	4 34 38.87	N.25 51 56.9	72.07	23	6 37 13.57	N.28 14 10.3	13.92
<i>TUESDAY 6.</i>				<i>THURSDAY 8.</i>			
0	4 37 12.10	N.25 59 9.4	70.30	0	6 39 43.46	N.28 12 46.8	15.59
1	4 39 45.46	26 6 11.2	68.53	1	6 42 13.08	28 11 13.3	17.26
2	4 42 18.93	26 13 2.4	66.75	2	6 44 42.42	28 9 29.7	18.92
3	4 44 52.52	26 19 42.9	64.96	3	6 47 11.48	28 7 36.2	20.57
4	4 47 26.21	26 26 12.6	63.17	4	6 49 40.25	28 5 32.8	22.21
5	4 49 59.99	26 32 31.6	61.37	5	6 52 8.72	28 3 19.5	23.84
6	4 52 33.86	26 38 39.8	59.56	6	6 54 36.89	28 0 56.5	25.46
7	4 55 7.81	26 44 37.2	57.76	7	6 57 4.75	27 58 23.7	27.07
8	4 57 41.83	26 50 23.7	55.95	8	6 59 32.29	27 55 41.3	28.67
9	5 0 15.92	26 55 59.4	54.13	9	7 1 59.51	27 52 49.3	30.26
10	5 2 50.06	27 1 24.2	52.31	10	7 4 26.40	27 49 47.7	31.83
11	5 5 24.25	27 6 38.1	50.49	11	7 6 52.96	27 46 36.7	33.40
12	5 7 58.47	27 11 41.0	48.66	12	7 9 19.18	27 43 16.3	34.96
13	5 10 32.72	27 16 33.0	46.84	13	7 11 45.06	27 39 46.6	36.50
14	5 13 7.00	27 21 14.0	45.01	14	7 14 10.59	27 36 7.6	
15	5 15 41.29	27 25 44.1	43.18	15	7 16 35.76	27 32 19.4	
16	5 18 15.58	27 30 3.2	41.35	16	7 19 0.58	27 28 22.1	
17	5 20 49.87	27 34 11.3	39.52	17	7 21 25.03	27 24 17.1	
18	5 23 24.15	27 38 8.4	37.69	18	7 23 49.11	27 20 1.1	
19	5 25 58.40	27 41 54.6	35.86	19	7 26 12.83	27 15 3.1	
20	5 28 32.62	27 45 29.8	34.03	20	7 28 36.16	27 11 1.1	
21	5 31 6.81	27 48 54.0	32.20	21	7 30 59.12	27 6 1.1	
22	5 33 40.95	27 52 7.2	30.38	22	7 33 21.70	27 1 1.1	
23	5 36 15.03	27 55 9.5	28.55	23	7 35 43.88	26 56 1.1	
24	5 38 49.05	N.27 58 0.8		24	7 38 5.68	N.26 51 1.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>FRIDAY 9.</i>				<i>SUNDAY 11.</i>			
0	7 38 5.68	N.26 51 25.0	52.65	0	9 23 27.23	N.20 24 16.5	104.86
1	7 40 27.08	26 46 9.1	54.04	1	9 25 29.02	20 13 47.3	105.65
2	7 42 48.09	26 40 44.9	55.42	2	9 27 30.44	20 3 13.4	106.43
3	7 45 8.69	26 35 12.4	56.78	3	9 29 31.49	19 52 34.8	107.19
4	7 47 28.89	26 29 31.7	58.13	4	9 31 32.17	19 41 51.7	107.95
5	7 49 48.69	26 23 42.9	59.47	5	9 33 32.49	19 31 4.0	108.69
6	7 52 8.09	26 17 46.1	60.80	6	9 35 32.45	19 20 11.8	109.43
7	7 54 27.07	26 11 41.3	62.11	7	9 37 32.05	19 9 15.3	110.15
8	7 56 45.65	26 5 28.6	63.41	8	9 39 31.30	18 58 14.4	110.86
9	7 59 3.81	25 59 8.1	64.70	9	9 41 30.20	18 47 9.2	111.56
10	8 1 21.56	25 52 39.9	65.98	10	9 43 28.75	18 35 59.8	112.25
11	8 3 38.89	25 46 4.0	67.24	11	9 45 26.96	18 24 46.3	112.94
12	8 5 55.80	25 39 20.6	68.48	12	9 47 24.83	18 13 28.7	113.61
13	8 8 12.30	25 32 29.7	69.72	13	9 49 22.36	18 2 7.1	114.27
14	8 10 28.37	25 25 31.4	70.94	14	9 51 19.57	17 50 41.5	114.92
15	8 12 44.03	25 18 25.7	72.15	15	9 53 16.45	17 39 11.9	115.56
16	8 14 59.27	25 11 12.8	73.34	16	9 55 13.00	17 27 38.6	116.19
17	8 17 14.08	25 3 52.8	74.52	17	9 57 9.23	17 16 1.4	116.81
18	8 19 28.47	24 56 25.6	75.69	18	9 59 5.14	17 4 20.6	117.42
19	8 21 42.44	24 48 51.5	76.85	19	10 1 0.74	16 52 36.0	118.03
20	8 23 55.99	24 41 10.4	77.99	20	10 2 56.03	16 40 47.9	118.62
21	8 26 9.11	24 33 22.4	79.12	21	10 4 51.02	16 28 56.1	119.20
22	8 28 21.81	24 25 27.7	80.24	22	10 6 45.71	16 17 0.9	119.78
23	8 30 34.09	N.24 17 26.3	81.34	23	10 8 40.10	N.16 5 2.3	120.34
<i>SATURDAY 10.</i>				<i>MONDAY 12.</i>			
0	8 32 45.95	N.24 9 18.2	82.43	0	10 10 34.19	N.15 53 0.2	120.90
1	8 34 57.39	24 1 3.6	83.51	1	10 12 28.00	15 40 54.8	121.44
2	8 37 8.40	23 52 42.5	84.58	2	10 14 21.52	15 28 46.2	121.98
3	8 39 19.00	23 44 15.1	85.63	3	10 16 14.76	15 16 34.3	122.51
4	8 41 29.18	23 35 41.3	86.67	4	10 18 7.73	15 4 19.2	123.03
5	8 43 38.94	23 27 1.3	87.69	5	10 20 0.42	14 52 1.0	123.54
6	8 45 48.28	23 18 15.2	88.70	6	10 21 52.85	14 39 39.7	124.05
7	8 47 57.21	23 9 22.9	89.70	7	10 23 45.01	14 27 15.5	124.54
8	8 50 5.73	23 0 24.7	90.69	8	10 25 36.91	14 14 48.2	125.03
9	8 52 13.83	22 51 20.5	91.67	9	10 27 28.55	14 2 18.1	125.50
10	8 54 21.52	22 42 10.5	92.63	10	10 29 19.94	13 49 45.0	125.97
11	8 56 28.80	22 32 54.7	93.58	11	10 31 11.09	13 37 9.2	126.43
12	8 58 35.68	22 23 33.2	94.52	12	10 33 1.99	13 24 30.6	126.89
13	9 0 42.15	22 14 6.1	95.45	13	10 34 52.65	13 11 49.3	127.33
14	9 2 48.22	22 4 33.4	96.36	14	10 36 43.08	12 59 5.3	127.77
15	9 4 53.89	21 54 55.2	97.26	15	10 38 33.28	12 46 18.7	128.20
16	9 6 59.15	21 45 11.7	98.15	16	10 40 23.26	12 33 29.5	128.62
17	9 9 4.02	21 35 22.7	99.03	17	10 42 13.01	12 20 37.8	129.03
18	9 11 8.50	21 25 28.5	99.90	18	10 44 2.54	12 7 43.6	129.43
19	9 13 12.59	21 15 29.1	100.76	19	10 45 51.87	11 54 47.0	129.83
20	9 15 16.29	21 5 24.6	101.60	20	10 47 40.98	11 41 48.1	130.22
21	9 17 19.60	20 55 15.0	102.43	21	10 49 29.89	11 28 46.8	130.60
22	9 19 22.52	20 45 0.4	103.25	22	10 51 18.60	11 15 43.2	130.97
23	9 21 25.07	20 34 40.9	104.06	23	10 53 7.12	11 2 37.3	131.34
24	9 23 27.23	N.20 24 16.5		24	10 54 55.44	N.10 49 29.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Dist. from Sun.	Hour.	Right Ascension.	Declination.	Dist. from Sun.
TUESDAY 13.				THURSDAY 15.			
0	10 54 55.44	N. 10 49 29.3	131.70	0	12 19 18.77	S. 0 10 2.8	140.68
1	10 56 43.58	10 36 19.1	132.05	1	12 21 3.24	0 24 6.9	140.70
2	10 58 31.54	10 23 6.8	132.39	2	12 22 47.75	0 38 11.1	140.71
3	11 0 19.32	10 9 52.5	132.73	3	12 24 32.30	0 52 15.3	140.72
4	11 2 6.93	9 56 36.1	133.06	4	12 26 16.89	1 6 19.7	140.72
5	11 3 54.37	9 43 17.8	133.38	5	12 28 1.53	1 20 24.0	140.71
6	11 5 41.65	9 29 57.5	133.69	6	12 29 46.22	1 34 28.2	140.70
7	11 7 28.77	9 16 35.4	134.00	7	12 31 30.96	1 48 32.4	140.68
8	11 9 15.74	9 3 11.4	134.30	8	12 33 15.76	2 2 36.5	140.63
9	11 11 2.55	8 49 45.6	134.59	9	12 35 0.63	2 16 40.4	140.61
10	11 12 49.22	8 36 18.1	134.87	10	12 36 45.57	2 30 44.1	140.57
11	11 14 35.74	8 22 48.8	135.15	11	12 38 30.58	2 44 47.5	140.52
12	11 16 22.13	8 9 17.9	135.42	12	12 40 15.67	2 58 50.7	140.47
13	11 18 8.38	7 55 45.4	135.69	13	12 42 0.84	3 12 53.5	140.41
14	11 19 54.51	7 42 11.2	135.95	14	12 43 46.10	3 26 56.0	140.34
15	11 21 40.52	7 28 35.5	136.20	15	12 45 31.45	3 40 58.0	140.26
16	11 23 26.40	7 14 58.4	136.44	16	12 47 16.89	3 54 59.5	140.17
17	11 25 12.17	7 1 19.7	136.68	17	12 49 2.43	4 9 0.6	140.08
18	11 26 57.83	6 47 39.7	136.91	18	12 50 48.08	4 23 1.1	139.98
19	11 28 43.39	6 33 58.2	137.13	19	12 52 33.84	4 37 0.9	139.87
20	11 30 28.84	6 20 15.4	137.35	20	12 54 19.71	4 51 0.2	139.76
21	11 32 14.20	6 6 31.3	137.56	21	12 56 5.69	5 4 58.7	139.63
22	11 33 59.46	5 52 46.0	137.76	22	12 57 51.80	5 18 56.5	139.50
23	11 35 44.64	N. 5 38 59.4	137.96	23	12 59 38.03	S. 5 32 53.5	139.36
WEDNESDAY 14.				FRIDAY 16.			
0	11 37 29.74	N. 5 25 11.7	138.15	0	13 1 24.39	S. 5 46 49.7	139.22
1	11 39 14.76	5 11 22.8	138.33	1	13 3 10.89	6 0 45.0	139.06
2	11 40 59.70	4 57 32.9	138.50	2	13 4 57.52	6 14 39.4	138.90
3	11 42 44.57	4 43 41.8	138.67	3	13 6 44.30	6 28 32.8	138.73
4	11 44 29.38	4 29 49.8	138.84	4	13 8 31.23	6 42 25.2	138.55
5	11 46 14.13	4 15 56.7	138.99	5	13 10 18.31	6 56 16.5	138.37
6	11 47 58.82	4 2 2.8	139.14	6	13 12 5.54	7 10 6.7	138.17
7	11 49 43.46	3 48 7.9	139.29	7	13 13 52.94	7 23 55.7	137.97
8	11 51 28.05	3 34 12.2	139.42	8	13 15 40.50	7 37 43.5	137.76
9	11 53 12.60	3 20 15.7	139.55	9	13 17 28.23	7 51 30.1	137.54
10	11 54 57.11	3 6 18.4	139.67	10	13 19 16.14	8 5 15.3	137.31
11	11 56 41.59	2 52 20.3	139.79	11	13 21 4.22	8 18 59.2	137.08
12	11 58 26.04	2 38 21.6	139.90	12	13 22 52.48	8 32 41.7	136.84
13	12 0 10.46	2 24 22.2	140.00	13	13 24 40.93	8 46 22.7	136.58
14	12 1 54.87	2 10 22.2	140.10	14	13 26 29.57	9 0 2.2	136.32
15	12 3 39.26	1 56 21.6	140.19	15	13 28 18.41	9 13 40.1	136.05
16	12 5 23.63	1 42 20.5	140.27	16	13 30 7.45	9 27 16.4	135.77
17	12 7 7.80	1 28 18.9	140.34	17	13 31 56.69	9 40 51.7	135.48
18	12 8 52.37	1 14 16.8	140.41	18	13 33 46.13	9 54 24.1	135.18
19	12 10 36.74	1 0 14.3	140.47	19	13 35 35.79	10 7 55.1	134.87
20	12 12 21.12	0 46 11.5	140.53	20	13 37 25.67	10 21 24.1	134.55
21	12 14 5.50	0 32 8.3	140.58	21	13 39 15.77	10 34 51.1	134.22
22	12 15 49.90	0 18 4.8	140.62	22	13 41 6.09	10 48 17.1	133.88
23	12 17 34.33	N. 0 4 1.1	140.65	23	13 42 56.64	11 1 40.1	133.53
24	12 19 18.77	S. 0 10 2.8	140.67	24	13 44 47.42	S. 11 15 2.1	133.17

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SATURDAY 17.</i>				<i>MONDAY 19.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	13 44 47.42	S. 11 15 2.1	133.21	0	15 19 10.57	S. 20 55 37.6	103.72
1	13 46 38.44	11 28 21.4	132.85	1	15 21 17.03	21 5 59.9	102.81
2	13 48 29.70	11 41 38.5	132.48	2	15 23 23.87	21 16 16.8	101.89
3	13 50 21.20	11 54 53.4	132.10	3	15 25 31.09	21 26 28.1	100.95
4	13 52 12.95	12 8 6.0	131.71	4	15 27 38.71	21 36 33.8	100.01
5	13 54 4.95	12 21 16.2	131.31	5	15 29 46.71	21 46 33.9	99.05
6	13 55 57.21	12 34 24.1	130.90	6	15 31 55.10	21 56 28.2	98.07
7	13 57 49.73	12 47 29.5	130.48	7	15 34 3.88	22 6 16.6	97.09
8	13 59 42.51	13 0 32.4	130.05	8	15 36 13.05	22 15 59.1	96.09
9	14 1 35.56	13 13 32.7	129.61	9	15 38 22.61	22 25 35.6	95.07
10	14 3 28.89	13 26 30.4	129.16	10	15 40 32.56	22 35 6.1	94.05
11	14 5 22.49	13 39 25.3	128.70	11	15 42 42.90	22 44 30.4	93.01
12	14 7 16.37	13 52 17.5	128.23	12	15 44 53.63	22 53 48.4	91.95
13	14 9 10.53	14 5 6.9	127.75	13	15 47 4.76	23 3 0.1	90.89
14	14 11 4.99	14 17 53.4	127.26	14	15 49 16.28	23 12 5.5	89.81
15	14 12 59.73	14 30 36.9	126.75	15	15 51 28.19	23 21 4.3	88.72
16	14 14 54.76	14 43 17.4	126.24	16	15 53 40.49	23 29 56.6	87.61
17	14 16 50.10	14 55 54.9	125.72	17	15 55 53.18	23 38 42.3	86.49
18	14 18 45.73	15 8 29.2	125.18	18	15 58 6.27	23 47 21.2	85.36
19	14 20 41.67	15 21 0.3	124.64	19	16 0 19.74	23 55 53.3	84.21
20	14 22 37.92	15 33 28.1	124.08	20	16 2 33.60	24 4 18.6	83.05
21	14 24 34.48	15 45 52.6	123.51	21	16 4 47.85	24 12 36.9	81.88
22	14 26 31.36	15 58 13.7	122.94	22	16 7 2.49	24 20 48.2	80.69
23	14 28 28.56	S. 16 10 31.3	122.35	23	16 9 17.51	S. 24 28 52.3	79.49
<i>SUNDAY 18.</i>				<i>TUESDAY 20.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	14 30 26.07	S. 16 22 45.4	121.75	0	16 11 32.92	S. 24 36 49.3	78.28
1	14 32 23.91	16 34 55.9	121.13	1	16 13 48.71	24 44 39.0	77.06
2	14 34 22.08	16 47 2.7	120.51	2	16 16 4.88	24 52 21.4	75.82
3	14 36 20.58	16 59 5.7	119.87	3	16 18 21.42	24 59 56.3	74.57
4	14 38 19.42	17 11 5.0	119.23	4	16 20 38.35	25 7 23.7	73.31
5	14 40 18.59	17 23 0.4	118.57	5	16 22 55.65	25 14 43.6	72.03
6	14 42 18.11	17 34 51.8	117.90	6	16 25 13.32	25 21 55.8	70.74
7	14 44 17.97	17 46 39.1	117.21	7	16 27 31.35	25 29 0.2	69.44
8	14 46 18.17	17 58 22.4	116.52	8	16 29 49.76	25 35 56.8	68.13
9	14 48 18.72	18 10 1.5	115.81	9	16 32 8.53	25 42 45.6	66.80
10	14 50 19.62	18 21 36.4	115.09	10	16 34 27.66	25 49 26.4	65.46
11	14 52 20.88	18 33 6.9	114.36	11	16 36 47.15	25 55 59.1	64.11
12	14 54 22.50	18 44 33.1	113.62	12	16 39 7.00	26 2 23.8	62.74
13	14 56 24.48	18 55 54.8	112.86	13	16 41 27.20	26 8 40.3	61.37
14	14 58 26.81	19 7 12.0	112.09	14	16 43 47.74	26 14 48.5	59.98
15	15 0 29.51	19 18 24.5	111.31	15	16 46 8.63	26 20 48.4	58.58
16	15 2 32.58	19 29 32.4	110.52	16	16 48 29.86	26 26 39.8	57.17
17	15 4 36.02	19 40 35.5	109.71	17	16 50 51.43	26 32 22.9	55.75
18	15 6 39.83	19 51 33.7	108.89	18	16 53 13.33	26 37 57.3	54.31
19	15 8 44.01	20 2 27.1	108.06	19	16 55 35.55	26 43 23.2	52.87
20	15 10 48.57	20 13 15.5	107.22	20	16 57 58.10	26 48 40.4	51.41
21	15 12 53.50	20 23 58.8	106.36	21	17 0 20.97	26 53 48.8	49.94
22	15 14 58.81	20 34 37.0	105.49	22	17 2 44.15	26 58 48.5	48.46
23	15 17 4.50	20 45 9.9	104.61	23	17 5 7.64	27 3 39.3	46.97
24	15 19 10.57	S. 20 55 37.6		24	17 7 31.43	S. 27 8 21.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>WEDNESDAY 21.</i>				<i>FRIDAY 23.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	17 7 31.43	S. 27 8 21.1	45.47	0	19 6 20.49	S. 27 43 19.8	34.24
1	17 9 55.52	27 12 53.9	43.96	1	19 8 50.63	27 39 54.4	35.95
2	17 12 19.91	27 17 17.7	42.44	2	19 11 20.70	27 36 18.7	37.65
3	17 14 44.58	27 21 32.4	40.91	3	19 13 50.70	27 32 32.8	39.35
4	17 17 9.54	27 25 37.8	39.37	4	19 16 20.62	27 28 36.7	41.05
5	17 19 34.77	27 29 34.1	37.82	5	19 18 50.45	27 24 30.4	42.75
6	17 22 0.27	27 33 21.0	36.26	6	19 21 20.18	27 20 13.9	44.44
7	17 24 26.04	27 36 58.6	34.70	7	19 23 49.81	27 15 47.3	46.12
8	17 26 52.06	27 40 26.8	33.12	8	19 26 19.33	27 11 10.5	47.80
9	17 29 18.33	27 43 45.5	31.53	9	19 28 48.73	27 6 23.7	49.48
10	17 31 44.85	27 46 54.7	29.94	10	19 31 18.01	27 1 26.8	51.15
11	17 34 11.60	27 49 54.4	28.34	11	19 33 47.16	26 56 19.9	52.82
12	17 36 38.59	27 52 44.4	26.73	12	19 36 16.17	26 51 3.0	54.48
13	17 39 5.80	27 55 24.8	25.11	13	19 38 45.04	26 45 36.1	56.13
14	17 41 33.23	27 57 55.4	23.49	14	19 41 13.75	26 39 59.3	57.78
15	17 44 0.87	28 0 16.3	21.85	15	19 43 42.31	26 34 12.6	59.42
16	17 46 28.71	28 2 27.5	20.21	16	19 46 10.71	26 28 16.1	61.06
17	17 48 56.75	28 4 28.8	18.57	17	19 48 38.94	26 22 9.7	62.70
18	17 51 24.98	28 6 20.2	16.92	18	19 51 6.99	26 15 53.6	64.31
19	17 53 53.38	28 8 1.7	15.26	19	19 53 34.87	26 9 27.8	65.92
20	17 56 21.96	28 9 33.2	13.60	20	19 56 2.57	26 2 52.3	67.52
21	17 58 50.71	28 10 54.8	11.93	21	19 58 30.07	25 56 7.1	69.12
22	18 1 19.62	28 12 6.4	10.25	22	20 0 57.37	25 49 12.4	70.71
23	18 3 48.67	S. 28 13 7.9	8.57	23	20 3 24.47	S. 25 42 8.1	72.29
<i>THURSDAY 22.</i>				<i>SATURDAY 24.</i>			
0	18 6 17.87	S. 28 13 59.3	6.89	0	20 5 51.37	S. 25 34 54.4	73.86
1	18 8 47.21	28 14 40.6	5.20	1	20 8 18.06	25 27 31.2	75.42
2	18 11 16.67	28 15 11.8	3.50	2	20 10 44.53	25 19 58.7	76.98
3	18 13 46.25	28 15 32.8	1.80	3	20 13 10.78	25 12 16.8	78.52
4	18 16 15.94	28 15 43.7	0.10	4	20 15 36.81	25 4 25.7	80.06
5	18 18 45.74	28 15 44.3	1.60	5	20 18 2.61	24 56 25.4	81.58
6	18 21 15.63	28 15 34.7	3.31	6	20 20 28.18	24 48 15.9	83.10
7	18 23 45.60	28 15 14.8	5.02	7	20 22 53.52	24 39 57.3	84.60
8	18 26 15.66	28 14 44.7	6.73	8	20 25 18.62	24 31 29.7	86.10
9	18 28 45.78	28 14 4.3	8.45	9	20 27 43.48	24 22 53.1	87.58
10	18 31 15.96	28 13 13.6	10.17	10	20 30 8.09	24 14 7.6	89.06
11	18 33 46.20	28 12 12.6	11.89	11	20 32 32.45	24 5 13.2	90.52
12	18 36 16.49	28 11 1.3	13.61	12	20 34 56.56	23 56 10.1	91.98
13	18 38 46.82	28 9 39.6	15.33	13	20 37 20.42	23 46 58.2	93.42
14	18 41 17.17	28 8 7.6	17.05	14	20 39 44.02	23 37 37.7	94.85
15	18 43 47.54	28 6 25.3	18.78	15	20 42 7.36	23 28 8.2	
16	18 46 17.92	28 4 32.7	20.50	16	20 44 30.44	23 18 31	
17	18 48 48.31	28 2 29.7	22.22	17	20 46 53.26	23 8	
18	18 51 18.70	28 0 16.3	23.94	18	20 49 15.82	22 58	
19	18 53 49.07	27 57 52.7	25.66	19	20 51 38.10	22	
20	18 56 19.42	27 55 18.7	27.38	20	20 54 0.12	22	
21	18 58 49.75	27 52 34.4	29.10	21	20 56 21.87	22	
22	19 1 20.04	27 49 39.9	30.81	22	20 58 43.35	22	
23	19 3 50.29	27 46 35.0	32.53	23	21 1 4.55	22	
24	19 6 20.49	S. 27 43 19.8		24	21 3 25.47	S. 21	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SUNDAY 25.</i>				<i>TUESDAY 27.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	21 3 25.47	S. 21 56 31.7	108.52	0	22 51 4.72	S. 11 11 50.9	155.80
1	21 5 46.12	21 45 40.6	109.82	1	22 53 13.88	10 56 16.1	156.44
2	21 8 6.50	21 34 41.6	111.11	2	22 55 22.87	10 40 37.4	157.07
3	21 10 26.61	21 23 35.0	112.39	3	22 57 31.70	10 24 55.0	157.68
4	21 12 46.44	21 12 20.6	113.65	4	22 59 40.39	10 9 8.9	158.28
5	21 15 5.99	21 0 58.7	114.90	5	23 1 48.92	9 53 19.2	158.86
6	21 17 25.26	20 49 29.4	116.14	6	23 3 57.31	9 37 26.0	159.43
7	21 19 44.26	20 37 52.5	117.36	7	23 6 5.56	9 21 29.4	159.99
8	21 22 2.99	20 26 8.4	118.57	8	23 8 13.67	9 5 29.5	160.53
9	21 24 21.44	20 14 17.0	119.77	9	23 10 21.65	8 49 26.3	161.06
10	21 26 39.62	20 2 18.4	120.95	10	23 12 29.51	8 33 19.9	161.57
11	21 28 57.52	19 50 12.6	122.12	11	23 14 37.25	8 17 10.5	162.07
12	21 31 15.15	19 37 59.9	123.28	12	23 16 44.87	8 0 58.1	162.55
13	21 33 32.51	19 25 40.2	124.42	13	23 18 52.38	7 44 42.8	163.02
14	21 35 49.59	19 13 13.7	125.56	14	23 20 59.79	7 28 24.7	163.47
15	21 38 6.41	19 0 40.3	126.67	15	23 23 7.10	7 12 3.8	163.91
16	21 40 22.96	18 48 0.3	127.78	16	23 25 14.31	6 55 40.3	164.34
17	21 42 39.24	18 35 13.6	128.87	17	23 27 21.43	6 39 14.3	164.75
18	21 44 55.26	18 22 20.4	129.95	18	23 29 28.47	6 22 45.8	165.15
19	21 47 11.01	18 9 20.7	131.01	19	23 31 35.43	6 6 14.9	165.53
20	21 49 26.50	17 56 14.7	132.06	20	23 33 42.31	5 49 41.8	165.89
21	21 51 41.73	17 43 2.3	133.10	21	23 35 49.12	5 33 6.4	166.25
22	21 53 56.70	17 29 43.7	134.12	22	23 37 55.87	5 16 28.9	166.58
23	21 56 11.42	S. 17 16 19.0	135.13	23	23 40 2.56	S. 4 59 49.4	166.91
<i>MONDAY 26.</i>				<i>WEDNESDAY 28.</i>			
0	21 58 25.88	S. 17 2 48.2	136.13	0	23 42 9.19	S. 4 43 8.0	167.22
1	22 0 40.09	16 49 11.5	137.11	1	23 44 15.78	4 26 24.7	167.51
2	22 2 54.06	16 35 28.8	138.07	2	23 46 22.32	4 9 39.7	167.79
3	22 5 7.78	16 21 40.4	139.03	3	23 48 28.82	3 52 52.9	168.05
4	22 7 21.26	16 7 46.2	139.97	4	23 50 35.29	3 36 4.6	168.30
5	22 9 34.49	15 53 46.4	140.89	5	23 52 41.73	3 19 14.9	168.53
6	22 11 47.49	15 39 41.0	141.80	6	23 54 48.15	3 2 23.7	168.75
7	22 14 0.26	15 25 30.2	142.70	7	23 56 54.55	2 45 31.2	168.95
8	22 16 12.79	15 11 14.0	143.59	8	23 59 0.94	2 28 37.5	169.14
9	22 18 25.09	14 56 52.5	144.46	9	0 1 7.32	2 11 42.6	169.31
10	22 20 37.17	14 42 25.7	145.31	10	0 3 13.70	1 54 46.8	169.47
11	22 22 49.03	14 27 53.8	146.15	11	0 5 20.09	1 37 50.0	169.61
12	22 25 0.67	14 13 16.9	146.98	12	0 7 26.48	1 20 52.3	169.74
13	22 27 12.10	13 58 35.0	147.80	13	0 9 32.89	1 3 53.9	169.85
14	22 29 23.31	13 43 48.2	148.59	14	0 11 39.32	0 46 54.8	169.94
15	22 31 34.32	13 28 56.7	149.38	15	0 13 45.78	0 29 55.1	170.02
16	22 33 45.13	13 14 0.4	150.15	16	0 15 52.27	S. 0 12 55.0	170.09
17	22 35 55.74	12 58 59.5	150.91	17	0 17 58.79	N. 0 4 5.5	170.14
18	22 38 6.15	12 43 54.0	151.65	18	0 20 5.36	0 21 6.4	170.17
19	22 40 16.36	12 28 44.2	152.38	19	0 22 11.97	0 38 7.4	170.19
20	22 42 26.39	12 13 29.9	153.09	20	0 24 18.64	0 55 8.6	170.19
21	22 44 36.24	11 58 11.4	153.79	21	0 26 25.37	1 12 9.7	170.18
22	22 46 45.91	11 42 48.6	154.47	22	0 28 32.16	1 29 10.8	170.15
23	22 48 55.40	11 27 21.8	155.14	23	0 30 39.02	1 46 11.8	170.11
24	22 51 4.72	S. 11 11 50.9		24	0 32 45.95	N. 2 3 12.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>THURSDAY 29.</i>				<i>SATURDAY 31.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	0 32 45.95	N. 2 3 12.4	170.05	0	2 17 25.73	N. 15 2 20.9	147.57
1	0 34 52.96	2 20 12.7	169.97	1	2 19 42.29	15 17 6.4	146.68
2	0 37 0.06	2 37 12.5	169.88	2	2 21 59.15	15 31 46.5	145.77
3	0 39 7.25	2 54 11.8	169.77	3	2 24 16.30	15 46 21.1	144.84
4	0 41 14.54	3 11 10.5	169.65	4	2 26 33.76	16 0 50.1	143.89
5	0 43 21.93	3 28 8.4	169.51	5	2 28 51.52	16 15 13.5	142.93
6	0 45 29.42	3 45 5.5	169.35	6	2 31 9.58	16 29 31.0	141.94
7	0 47 37.03	4 2 1.6	169.18	7	2 33 27.95	16 43 42.7	140.94
8	0 49 44.75	4 18 56.7	168.99	8	2 35 46.62	16 57 48.3	139.93
9	0 51 52.59	4 35 50.7	168.79	9	2 38 5.61	17 11 47.9	138.89
10	0 54 0.57	4 52 43.4	168.57	10	2 40 24.90	17 25 41.3	137.84
11	0 56 8.67	5 9 34.8	168.33	11	2 42 44.51	17 39 28.3	136.77
12	0 58 16.91	5 26 24.8	168.08	12	2 45 4.43	17 53 8.9	135.68
13	1 0 25.30	5 43 13.3	167.81	13	2 47 24.67	18 6 43.0	134.58
14	1 2 33.83	6 0 0.1	167.52	14	2 49 45.23	18 20 10.5	133.45
15	1 4 42.52	6 16 45.2	167.22	15	2 52 6.10	18 33 31.2	132.31
16	1 6 51.37	6 33 28.5	166.90	16	2 54 27.29	18 46 45.0	131.16
17	1 9 0.38	6 50 9.9	166.56	17	2 56 48.80	18 59 52.0	129.98
18	1 11 9.55	7 6 49.3	166.20	18	2 59 10.63	19 12 51.9	128.79
19	1 13 18.90	7 23 26.5	165.83	19	3 1 32.77	19 25 44.6	127.58
20	1 15 28.43	7 40 1.5	165.45	20	3 3 55.24	19 38 30.1	126.36
21	1 17 38.15	7 56 34.2	165.04	21	3 6 18.02	19 51 8.3	125.12
22	1 19 48.05	8 13 4.5	164.62	22	3 8 41.13	20 3 39.0	123.86
23	1 21 58.14	N. 8 29 32.2	164.18	23	3 11 4.55	N. 20 16 2.1	122.58
<i>FRIDAY 30.</i>				<i>SUNDAY, JUNE 1.</i>			
0	1 24 8.43	N. 8 45 57.3	163.73	0	3 13 28.29	N. 20 28 17.6	
1	1 26 18.92	9 2 19.7	163.26				
2	1 28 29.62	9 18 39.2	162.77				
3	1 30 40.53	9 34 55.8	162.26				
4	1 32 51.66	9 51 9.4	161.74				
5	1 35 3.00	10 7 19.8	161.19				
6	1 37 14.57	10 23 27.0	160.63				
7	1 39 26.37	10 39 30.8	160.06				
8	1 41 38.40	10 55 31.1	159.46				
9	1 43 50.67	11 11 27.9	158.85				
10	1 46 3.18	11 27 21.0	158.23				
11	1 48 15.93	11 43 10.4	157.58				
12	1 50 28.94	11 58 55.9	156.92				
13	1 52 42.20	12 14 37.4	156.24				
14	1 54 55.71	12 30 14.8	155.54				
15	1 57 9.48	12 45 48.1	154.82				
16	1 59 23.52	13 1 17.0	154.09				
17	2 1 37.83	13 16 41.5	153.34				
18	2 3 52.40	13 32 1.5	152.57				
19	2 6 7.25	13 47 16.9	151.78				
20	2 8 22.38	14 2 27.6	150.97				
21	2 10 37.79	14 17 33.4	150.15				
22	2 12 53.48	14 32 34.3	149.31				
23	2 15 9.46	14 47 30.2	148.45				
24	2 17 25.73	N. 15 2 20.9					

PHASES OF THE MOON.

- | | d | h | m |
|-----------------|---|----|---------|
| ● New Moon | - | 4 | 2 42.3 |
| ☾ First Quarter | - | 11 | 8 45.1 |
| ☽ Full Moon | - | 19 | 11 56.5 |
| ☾ Last Quarter | - | 26 | 17 33.1 |

- ☾ Perigee - - - -
- ☾ Apogee - - - -
- ☾ Perigee - - - -

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		LUNAR DISTANCES.												
			Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.					
			° ' "		° ' "		° ' "		° ' "		° ' "		° ' "		° ' "
1	α Aquilæ	W.	64 13 3	3190	65 39 24	3153	67 6 30	3119	68 34 17	3088					
	SUN	E.	43 1 51	2407	41 18 27	2401	39 34 54	2396	37 51 13	2391					
6	SUN	W.	25 35 54	2646	27 13 46	2663	28 51 16	2679	30 28 24	2696					
	Pollux	E.	39 43 10	2330	37 57 54	2347	36 13 3	2363	34 28 35	2380					
	Regulus	E.	76 24 3	2337	74 38 58	2353	72 54 16	2371	71 9 59	2387					
	Mars	E.	111 47 37	2199	110 1 36	2315	108 15 59	2332	106 30 46	2349					
7	SUN	W.	38 28 15	2785	40 3 2	2804	41 37 24	2822	43 11 23	2841					
	Pollux	E.	25 52 28	2469	24 10 31	2487	22 29 0	2506	20 47 55	2525					
	Regulus	E.	62 34 38	2474	60 52 49	2492	59 11 24	2510	57 30 25	2528					
	Mars	E.	97 50 54	2436	96 8 11	2455	94 25 54	2472	92 44 2	2490					
	Spica ♀	E.	116 36 13	2465	114 54 11	2483	113 12 34	2500	111 31 20	2518					
8	SUN	W.	50 55 11	2935	52 26 45	2954	53 57 55	2973	55 28 42	2991					
	Saturn	W.	12 28 55	3060	13 57 54	2991	15 28 18	2946	16 59 38	2917					
	Regulus	E.	49 11 48	2620	47 33 20	2638	45 55 17	2657	44 17 40	2675					
	Mars	E.	84 21 1	2581	82 41 40	2599	81 2 44	2616	79 24 11	2635					
	Spica ♀	E.	103 11 20	2606	101 32 33	2623	99 54 9	2640	98 16 8	2658					
9	SUN	W.	62 56 55	3081	64 25 28	3098	65 53 40	3115	67 21 31	3133					
	Saturn	W.	24 41 45	2887	26 14 21	2891	27 46 52	2897	29 19 15	2905					
	Regulus	E.	36 15 40	2767	34 40 29	2786	33 5 43	2804	31 31 20	2824					
	Mars	E.	71 17 24	2720	69 41 11	2737	68 5 20	2753	66 29 51	2769					
	Spica ♀	E.	90 11 48	2741	88 36 2	2757	87 0 37	2772	85 25 33	2788					
10	SUN	W.	74 35 51	3210	76 1 48	3225	77 27 28	3240	78 52 50	3253					
	Saturn	W.	36 58 30	2950	38 29 45	2961	40 0 47	2971	41 31 36	2981					
	Mars	E.	58 37 29	2845	57 3 59	2859	55 30 47	2872	53 57 52	2885					
	Spica ♀	E.	77 35 8	2860	76 1 58	2874	74 29 6	2887	72 56 31	2900					
11	SUN	W.	85 55 51	3316	87 19 44	3326	88 43 25	3337	90 6 54	3348					
	Saturn	W.	49 2 37	3029	50 32 14	3038	52 1 40	3047	53 30 55	3055					
	Pollux	W.	25 33 21	2960	27 4 24	2970	28 35 14	2980	30 5 52	2988					
	Mars	E.	46 17 22	2946	44 46 1	2957	43 14 54	2967	41 44 0	2977					
	Spica ♀	E.	65 17 28	2958	63 46 23	2968	62 15 30	2978	60 44 50	2987					
	Antares	E.	111 10 25	2954	109 39 15	2965	108 8 18	2974	106 37 33	2984					
12	SUN	W.	97 1 31	3391	98 23 58	3398	99 46 17	3405	101 8 28	3411					
	Saturn	W.	60 54 47	3090	62 23 9	3096	63 51 23	3102	65 19 30	3107					
	Pollux	W.	37 36 30	3026	39 6 10	3033	40 35 42	3039	42 5 7	3044					
	Mars	E.	34 12 24	3020	32 42 36	3027	31 12 57	3034	29 43 27	3040					
	Spica ♀	E.	53 14 14	3028	51 44 36	3035	50 15 6	3042	48 45 45	3047					
	Antares	E.	99 6 32	3023	97 36 48	3030	96 7 12	3036	94 37 44	3042					
13	SUN	W.	107 57 48	3435	109 19 25	3438	110 40 58	3441	112 2 28	3443					
	Saturn	W.	72 38 42	3127	74 6 19	3129	75 33 53	3132	77 1 24	3133					
	Pollux	W.	49 30 41	3065	50 59 34	3068	52 28 23	3069	53 57 10	3072					
	Regulus	W.	13 23 40	3239	14 49 3	3210	16 15 0	3189	17 41 22	3173					
	Spica ♀	E.	41 20 35	3070	39 51 49	3074	38 23 8	3077	36 54 30	3079					
	Antares	E.	87 11 57	3063	85 43 2	3066	84 14 11	3069	82 45 23	3070					
14	SUN	W.	118 49 30	3447	120 10 53	3448	121 32 15	3447	122 53 39	3446					
	Saturn	W.	84 18 38	3137	85 46 3	3135	87 13 30	3135	88 40 57	3133					

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.			P.L. of diff.			P.L. of diff.			P.L. of diff.			
			°	'	"	°	'	"	°	'	"	°	'	"	
1	α Aquila W.	70 2 41	3060	71	31	40	3035	73	1	9	3013	74	31	5	2993
	SUN E.	36 7 26	2387	34	23	32	2383	32	39	33	2380	30	55	30	2378
6	SUN W.	32 5 9	2714	33	41	31	2731	35	17	29	2749	36	53	4	2767
	Pollux E.	32 44 32	2397	31	0	53	2415	29	17	39	2433	27	34	51	2450
	Regulus E.	69 26 6	2404	67	42	37	2421	65	59	33	2438	64	16	53	2456
	Mars E.	104 45 58	2366	103	1	34	2384	101	17	36	2401	99	34	2	2419
7	SUN W.	44 44 57	2860	46	18	7	2880	47	50	52	2898	49	23	14	2917
	Pollux E.	19 7 17	2545	17	27	7	2566	15	47	25	2588	14	8	13	2610
	Regulus E.	55 49 51	2546	54	9	42	2565	52	29	59	2583	50	50	41	2601
	Mars E.	91 2 35	2509	89	21	34	2527	87	40	58	2545	86	0	47	2563
	Spica ♀ E.	109 50 32	2535	108	10	7	2553	106	30	7	2571	104	50	32	2588
8	SUN W.	56 59 6	3010	58	29	7	3028	59	58	45	3046	61	28	1	3064
	Saturn W.	18 31 35	2899	20	3	55	2890	21	36	27	2885	23	9	5	2884
	Regulus E.	42 40 27	2693	41	3	38	2712	39	27	14	2731	37	51	15	2749
	Mars E.	77 46 3	2652	76	8	19	2669	74	30	57	2687	72	53	59	2704
	Spica ♀ E.	96 38 31	2675	95	1	17	2691	93	24	25	2708	91	47	55	2725
9	SUN W.	68 49 1	3148	70	16	12	3164	71	43	4	3180	73	9	37	3196
	Saturn W.	30 51 28	2913	32	23	31	2921	33	55	23	2931	35	27	3	2941
	Regulus E.	29 57 23	2842	28	23	50	2862	26	50	42	2882	25	18	0	2902
	Mars E.	64 54 42	2785	63	19	54	2801	61	45	27	2815	60	11	18	2830
	Spica ♀ E.	83 50 49	2803	82	16	25	2818	80	42	21	2832	79	8	35	2847
10	SUN W.	80 17 57	3267	81	42	47	3279	83	7	23	3292	84	31	44	3304
	Saturn W.	43 2 13	2991	44	32	37	3001	46	2	49	3010	47	32	49	3020
	Mars E.	52 25 14	2898	50	52	53	2911	49	20	48	2923	47	48	58	2934
	Spica ♀ E.	71 24 12	2912	69	52	9	2924	68	20	21	2936	66	48	48	2946
11	SUN W.	91 30 10	3357	92	53	16	3366	94	16	11	3375	95	38	56	3384
	Saturn W.	55 0 0	3063	56	28	55	3070	57	57	41	3078	59	26	18	3084
	Pollux W.	31 36 20	2997	33	6	37	3005	34	36	44	3013	36	6	41	3019
	Mars E.	40 13 18	2986	38	42	48	2996	37	12	30	3004	35	42	22	3012
	Spica ♀ E.	59 14 21	2997	57	44	4	3005	56	13	57	3013	54	44	1	3021
	Antares E.	105 7 0	2992	103	36	37	3001	102	6	26	3009	100	36	24	3017
12	SUN W.	102 30 32	3417	103	52	29	3422	105	14	21	3427	106	36	7	3431
	Saturn W.	66 47 31	3112	68	15	26	3116	69	43	16	3120	71	11	1	3124
	Pollux W.	43 34 25	3049	45	3	37	3054	46	32	43	3057	48	1	45	3062
	Mars E.	28 14 4	3047	26	44	49	3052	25	15	41	3057	23	46	39	3062
	Spica ♀ E.	47 16 30	3053	45	47	23	3058	44	18	22	3062	42	49	26	3066
	Antares E.	93 8 23	3047	91	39	8	3052	90	9	59	3056	88	40	56	3060
13	SUN W.	113 23 56	3446	114	45	21	3447	116	6	45	3447	117	28	8	
	Saturn W.	78 28 53	3134	79	56	21	3136	81	23	47	3137	82	51	1	
	Pollux W.	55 25 54	3073	56	54	36	3074	58	23	17	3075	59	51		
	Regulus W.	19 8 4	3160	20	35	1	3150	22	2	10	3141	23	29		
	Spica ♀ E.	35 25 55	3082	33	57	23	3083	32	28	53	3086	31	0		
	Antares E.	81 16 37	3072	79	47	53	3073	78	19	10	3074	76	51		
14	SUN W.	124 15 4	3444	125	36	31	3442	126	58	0	3439	128	1		
	Saturn W.	90 8 27	3132	91	35	58	3129	93	3	32	3127	94			

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			P.L. of diff.	III ^h .			P.L. of diff.	VI ^h .			P.L. of diff.	IX ^h .			P.L. of diff.
		°	'	"		°	'	"		°	'	"		°	'	"	
14	Pollux W.	61	20	37	3075	62	49	17	3074	64	17	58	3073	65	46	40	3072
	Regulus W.	24	56	58	3128	26	24	34	3121	27	52	18	3116	29	20	8	3110
	Spica ♀ E.	29	32	0	3087	28	3	35	3089	26	35	12	3089	25	6	49	3090
	Antares E.	75	21	48	3074	73	53	6	3073	72	24	24	3072	70	55	40	3071
15	SUN W.	129	41	7	3434	131	2	45	3430	132	24	27	3426	133	46	14	3422
	Saturn W.	95	58	49	3121	97	26	33	3117	98	54	22	3114	100	22	15	3110
	Pollux W.	73	10	46	3059	74	39	46	3056	76	8	50	3052	77	37	58	3047
	Regulus W.	36	40	54	3085	38	9	22	3080	39	37	56	3074	41	6	37	3069
	Antares E.	63	31	29	3059	62	2	29	3055	60	33	24	3051	59	4	14	3047
	♌ Aquilæ E.	110	54	2	4043	109	43	5	4022	108	31	47	4002	107	20	9	3981
16	Pollux W.	85	5	10	3022	86	34	56	3015	88	4	50	3009	89	34	51	3002
	Regulus W.	48	31	52	3037	50	1	19	3031	51	30	53	3023	53	0	37	3017
	Antares E.	51	37	0	3021	50	7	13	3015	48	37	19	3009	47	7	17	3002
	♌ Aquilæ E.	101	17	21	3897	100	3	58	3883	98	50	21	3869	97	36	30	3857
17	Pollux W.	97	7	7	2967	98	38	1	2958	100	9	6	2950	101	40	21	2943
	Regulus W.	60	31	32	2978	62	2	12	2970	63	33	3	2962	65	4	4	2954
	Mars W.	25	15	23	2986	26	45	53	2978	28	16	33	2970	29	47	23	2963
	Antares E.	39	35	0	2967	38	4	6	2958	36	33	1	2951	35	1	47	2943
	♌ Aquilæ E.	91	24	17	3805	90	9	20	3797	88	54	15	3790	87	39	2	3784
	18	Regulus W.	72	41	51	2909	74	13	59	2901	75	46	17	2891	77	18	47
Mars W.		37	24	1	2922	38	55	52	2914	40	27	53	2905	42	0	6	2897
Spica ♀ W.		18	40	11	2929	20	11	53	2916	21	43	52	2904	23	16	6	2892
Antares E.		27	23	2	2901	25	50	45	2893	24	18	17	2884	22	45	38	2876
♌ Aquilæ E.		81	21	38	3765	80	5	59	3765	78	50	20	3766	77	34	42	3767
Fomalhaut E.		109	15	50	3114	107	47	57	3102	106	19	50	3090	104	51	28	3078
19	Regulus W.	85	4	16	2835	86	37	58	2826	88	11	52	2817	89	45	58	2808
	Mars W.	49	43	54	2852	51	17	14	2844	52	50	45	2835	54	24	28	2826
	Spica ♀ W.	31	0	55	2838	32	34	34	2828	34	8	26	2817	35	42	32	2807
	♌ Aquilæ E.	71	17	19	3794	70	2	11	3804	68	47	13	3816	67	32	28	3830
	Fomalhaut E.	97	26	5	3022	95	56	19	3012	94	26	21	3001	92	56	9	2992
	20	Regulus W.	97	39	31	2760	99	14	51	2752	100	50	22	2742	102	26	6
Mars W.		62	15	56	2782	63	50	48	2772	65	25	52	2763	67	1	8	2755
Spica ♀ W.		43	36	16	2757	45	11	40	2748	46	47	16	2738	48	23	5	2729
♌ Aquilæ E.		61	23	2	2935	60	10	18	2925	58	58	4	2898	57	46	22	2935
Fomalhaut E.		85	22	16	2946	83	50	56	2938	82	19	26	2931	80	47	46	2923
♌ Pegasi E.		106	13	48	3111	104	45	52	3096	103	17	38	3083	101	49	8	3069
Jupiter E.		116	35	28	2813	115	1	17	2803	113	26	53	2795	111	52	18	2785
21	Mars W.	75	0	20	2711	76	36	45	2702	78	13	22	2695	79	50	9	2686
	Spica ♀ W.	56	25	18	2682	58	2	22	2673	59	39	38	2664	61	17	6	2655
	♌ Aquilæ E.	51	58	17	4289	50	51	14	4358	49	45	15	4434	48	40	24	4519
	Fomalhaut E.	73	7	15	2892	71	34	46	2887	70	2	10	2883	68	29	30	2879
	♌ Pegasi E.	94	22	42	3011	92	52	43	3001	91	22	32	2992	89	52	9	2983
	Jupiter E.	103	56	14	2738	102	20	24	2729	100	44	22	2720	99	8	8	2711
22	Mars W.	87	56	58	2644	89	34	53	2636	91	12	59	2628	92	51	16	2619
	Spica ♀ W.	69	27	29	2610	71	6	10	2602	72	45	2	2593	74	24	6	2585
	Antares W.	23	33	9	2610	25	11	50	2601	26	50	43	2593	28	29	48	2585

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.		Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
			° ' "		° ' "		° ' "		° ' "	
14	Pollux	W.	67 15 24	3070	68 44 10	3068	70 12 59	3065	71 41 51	3063
	Regulus	W.	30 48 5	3105	32 16 8	3101	33 44 17	3096	35 12 32	3090
	Spica η	E.	23 38 27	3091	22 10 6	3092	20 41 46	3093	19 13 28	3095
	Antares	E.	69 26 55	3069	67 58 8	3068	66 29 19	3065	65 0 26	3061
15	SUN	W.	135 8 5	3417	136 30 2	3413	137 52 4	3408	139 14 11	3403
	Saturn	W.	101 50 13	3105	103 18 16	3100	104 46 25	3096	106 14 40	3091
	Pollux	W.	79 7 13	3043	80 36 32	3038	82 5 58	3032	83 35 31	3027
	Regulus	W.	42 35 25	3062	44 4 21	3057	45 33 23	3050	47 2 34	3044
	Antares	E.	57 34 59	3043	56 5 39	3037	54 36 12	3032	53 6 39	3027
	α Aquilæ	E.	106 8 11	3962	104 55 54	3944	103 43 19	3928	102 30 28	3913
16	Pollux	W.	91 5 1	2996	92 35 19	2989	94 5 46	2981	95 36 22	2974
	Regulus	W.	54 30 29	3009	56 0 30	3001	57 30 41	2993	59 1 2	2986
	Antares	E.	45 37 7	2996	44 6 49	2988	42 36 21	2981	41 5 45	2974
	α Aquilæ	E.	96 22 26	3845	95 8 10	3834	93 53 43	3823	92 39 5	3814
17	Pollux	W.	103 11 45	2934	104 43 21	2926	106 15 7	2918	107 47 3	2909
	Regulus	W.	66 35 15	2944	68 6 38	2936	69 38 11	2927	71 9 56	2919
	Mars	W.	31 18 22	2955	32 49 31	2946	34 20 51	2938	35 52 21	2931
	Antares	E.	33 30 23	2935	31 58 48	2927	30 27 4	2918	28 55 8	2910
	α Aquilæ	E.	86 23 43	3778	85 8 18	3773	83 52 48	3770	82 37 14	3767
18	Regulus	W.	78 51 29	2873	80 24 23	2863	81 57 29	2855	83 30 46	2845
	Mars	W.	43 32 29	2888	45 5 3	2879	46 37 49	2870	48 10 46	2862
	Spica η	W.	24 48 35	2880	26 21 19	2869	27 54 17	2859	29 27 29	2848
	Antares	E.	21 12 49	2867	19 39 48	2859	18 6 37	2851	16 33 15	2844
	α Aquilæ	E.	76 19 5	3769	75 3 30	3773	73 48 0	3779	72 32 36	3786
	Fomalhaut	E.	103 22 52	3066	101 54 1	3055	100 24 56	3043	98 55 37	3033
19	Regulus	W.	91 20 16	2798	92 54 47	2789	94 29 29	2779	96 4 24	2770
	Mars	W.	55 58 22	2817	57 32 28	2808	59 6 45	2798	60 41 15	2790
	Spica η	W.	37 16 51	2797	38 51 23	2788	40 26 7	2777	42 1 5	2767
	α Aquilæ	E.	66 17 57	3847	65 3 43	3865	63 49 48	3885	62 36 13	3909
	Fomalhaut	E.	91 25 46	2982	89 55 11	2973	88 24 24	2963	86 53 25	2955
20	Regulus	W.	104 2 1	2724	105 38 9	2716	107 14 28	2706	108 51 0	2698
	Mars	W.	68 36 35	2746	70 12 14	2737	71 48 5	2729	73 24 7	2720
	Spica η	W.	49 59 6	2720	51 35 20	2710	53 11 47	2701	54 48 26	2691
	α Aquilæ	E.	56 35 17	4076	55 24 52	4121	54 15 10	4172	53 6 17	4228
	Fomalhaut	E.	79 15 56	2916	77 43 58	2909	76 11 51	2904	74 39 37	2898
	α Pegasi	E.	100 20 21	3056	98 51 18	3044	97 22 0	3033	95 52 28	3022
	Jupiter	E.	110 17 30	2775	108 42 29	2766	107 7 16	2756	105 31 51	
21	Mars	W.	81 27 8	2677	83 4 19	2669	84 41 41	2661	86 19	
	Spica η	W.	62 54 47	2646	64 32 40	2637	66 10 44	2628	67 49	
	α Aquilæ	E.	47 36 49	4613	46 34 35	4718	45 33 51	4834	44 34	
	Fomalhaut	E.	66 56 44	2876	65 23 55	2873	63 51 2	2872	62 18	
	α Pegasi	E.	88 21 35	2974	86 50 50	2967	85 19 56	2959	83 48	
	Jupiter	E.	97 31 42	2702	95 55 4	2693	94 18 14	2684	92 41	
22	Mars	W.	94 29 45	2612	96 8 24	2604	97 47 14	2596	99 26	
	Spica η	W.	76 3 22	2577	77 42 49	2568	79 22 28	2560	81 2	
	Antares	W.	30 9 4	2575	31 48 33	2566	33 28 14	2558	35	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			P.L. of diff.			III ^b .			P.L. of diff.			VI ^b .			P.L. of diff.			IX ^b .			
		°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	
22	Fomalhaut E.	60	45	10	2870	59	12	13	2871	57	39	17	2873	56	6	23	2						
	α Pegasi E.	82	17	40	2947	80	46	21	2942	79	14	55	2937	77	43	23	2						
	Jupiter E.	91	3	58	2666	89	26	32	2658	87	48	55	2649	86	11	6	2						
23	Mars W.	101	5	26	2580	102	44	49	2573	104	24	21	2564	106	4	5	2						
	Spica η W.	82	42	20	2543	84	22	33	2535	86	2	58	2527	87	43	34	2						
	Antares W.	36	48	10	2541	38	28	26	2533	40	8	53	2525	41	49	31	2						
	Fomalhaut E.	48	23	19	2911	46	51	14	2924	45	19	25	2939	43	47	55	2						
	α Pegasi E.	70	4	42	2923	68	32	53	2924	67	1	4	2926	65	29	18	2						
	Jupiter E.	77	59	4	2597	76	20	5	2589	74	40	55	2580	73	1	33	2						
	SUN E.	137	32	2	2876	135	59	13	2867	134	26	12	2858	132	52	59	2						
24	Spica η W.	96	9	21	2479	97	51	3	2471	99	32	57	2464	101	15	1	2						
	Antares W.	50	15	32	2477	51	57	18	2470	53	39	14	2461	55	21	22	2						
	Fomalhaut E.	36	17	42	3110	34	49	45	3160	33	22	48	3217	31	56	59	3						
	α Pegasi E.	57	51	53	2962	56	20	53	2974	54	50	8	2988	53	19	40	3						
	Jupiter E.	64	41	56	2532	63	1	27	2524	61	20	47	2516	59	39	56	2						
	SUN E.	125	3	57	2804	123	29	34	2795	121	55	0	2786	120	20	14	2						
25	Antares W.	63	54	47	2415	65	38	0	2407	67	21	24	2400	69	4	59	2						
	α Pegasi E.	45	53	34	3132	44	26	3	3170	42	59	18	3214	41	33	25	3						
	Jupiter E.	51	12	54	2469	49	30	57	2461	47	48	49	2453	46	6	30	2						
	SUN E.	112	23	38	2736	110	47	46	2728	109	11	43	2720	107	35	29	2						
	Antares W.	77	45	34	2356	79	30	12	2348	81	15	1	2341	83	0	0	2						
26	Jupiter E.	37	32	17	2408	35	48	54	2401	34	5	21	2395	32	21	39	2						
	SUN E.	99	31	40	2672	97	54	23	2664	96	16	55	2657	94	39	17	2						
	Antares W.	91	47	25	2300	93	33	24	2295	95	19	31	2288	97	5	48	2						
	α Aquilæ W.	50	33	54	3927	51	46	46	3842	53	1	5	3764	54	16	45	3						
27	α Arietis E.	57	11	59	2375	55	27	49	2373	53	43	35	2370	51	59	17	2						
	SUN E.	86	28	39	2614	84	50	3	2607	83	11	17	2600	81	32	22	2						
	α Aquilæ W.	60	52	19	3413	62	14	21	3370	63	37	12	3330	65	0	49	3						
28	Fomalhaut W.	28	29	6	3223	29	54	48	3118	31	22	36	3027	32	52	15	2						
	α Arietis E.	43	17	22	2368	41	33	2	2372	39	48	47	2376	38	4	38	2						
	SUN E.	73	15	40	2564	71	35	55	2559	69	56	4	2553	68	16	5	2						
	α Aquilæ W.	72	8	23	3153	73	35	28	3133	75	2	57	3115	76	30	48	3						
29	Fomalhaut W.	40	41	12	2689	42	18	6	2655	43	55	47	2624	45	34	9	2						
	α Pegasi W.	26	33	15	4721	27	33	57	4419	28	39	1	4168	29	47	58	3						
	SUN E.	59	54	39	2529	58	14	6	2526	56	33	29	2524	54	52	49	2						
	α Aquilæ W.	83	54	18	3046	85	23	34	3041	86	52	56	3038	88	22	22	3						
30	Fomalhaut W.	53	54	9	2499	55	35	23	2486	57	16	56	2475	58	58	45	2						
	α Pegasi W.	36	17	23	3276	37	42	2	3190	39	8	23	3116	40	36	13	3						
	Jupiter W.	18	49	29	2251	20	36	41	2250	22	23	54	2249	24	11	9	2						
	SUN E.	46	28	52	2517	44	48	2	2517	43	7	13	2518	41	26	25	2						
	α Aquilæ W.	95	49	13	3056	97	18	17	3066	98	47	8	3078	100	15	45	3						
31	Fomalhaut W.	67	30	45	2434	69	13	32	2431	70	56	22	2430	72	39	14	2						
	α Pegasi W.	48	12	41	2827	49	46	34	2797	51	21	6	2770	52	56	13	2						
	Jupiter W.	33	7	8	2256	34	54	13	2258	36	41	14	2261	38	28	11	2						
	SUN E.	33	3	22	2540	31	23	4	2546	29	42	55	2553	28	2	56	2						

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
22	Fomalhaut E.	54	33	32	2879	53	0	46	2885	51	28	8	2891	49	55	38	2900
	α Pegasi E.	76	11	45	2929	74	40	3	2927	73	8	18	2925	71	36	31	2924
	Jupiter E.	84	33	5	2631	82	54	52	2623	81	16	28	2614	79	37	52	2605
23	Mars W.	107	43	59	2549	109	24	4	2542	111	4	19	2534	112	44	45	2527
	Spica ♀ W.	89	24	21	2511	91	5	19	2503	92	46	28	2495	94	27	49	2487
	Antares W.	43	30	20	2508	45	11	22	2501	46	52	34	2493	48	33	57	2485
	Fomalhaut E.	42	16	49	2978	40	46	9	3004	39	16	1	3034	37	46	30	3069
	α Pegasi E.	63	57	36	2932	62	25	58	2938	60	54	27	2945	59	23	5	2953
	Jupiter E.	71	22	0	2564	69	42	16	2556	68	2	21	2548	66	22	14	2540
	SUN E.	131	19	34	2839	129	45	57	2830	128	12	8	2821	126	38	8	2813
24	Spica ♀ W.	102	57	16	2448	104	39	42	2440	106	22	19	2432	108	5	8	2425
	Antares W.	57	3	41	2446	58	46	11	2438	60	28	52	2430	62	11	44	2422
	Fomalhaut E.	30	32	30	3367	29	9	36	3465	27	48	33	3582	26	29	39	3724
	α Pegasi E.	51	49	33	3023	50	19	49	3044	48	50	31	3070	47	21	45	3099
	Jupiter E.	57	58	53	2500	56	17	40	2492	54	36	16	2484	52	54	40	2477
	SUN E.	118	45	17	2769	117	10	9	2761	115	34	50	2752	113	59	19	2744
25	Antares W.	70	48	45	2385	72	32	41	2377	74	16	48	2370	76	1	6	2363
	α Pegasi E.	40	8	32	3322	38	44	46	3388	37	22	16	3465	36	1	13	3555
	Jupiter E.	44	24	1	2438	42	41	21	2431	40	58	30	2424	39	15	29	2416
	SUN E.	105	59	5	2703	104	22	29	2695	102	45	43	2688	101	8	47	2680
26	Antares W.	84	45	9	2328	86	30	28	2321	88	15	57	2314	90	1	36	2307
	Jupiter E.	30	37	45	2380	28	53	42	2373	27	9	29	2366	25	25	6	2360
	SUN E.	93	1	29	2642	91	23	31	2635	89	45	24	2627	88	7	6	2621
27	Antares W.	98	52	14	2276	100	38	49	2270	102	25	32	2264	104	12	24	2259
	α Aquilæ W.	55	33	40	3626	56	51	46	3566	58	10	57	3511	59	31	9	3459
	α Arietis E.	50	14	56	2366	48	30	33	2366	46	46	9	2366	45	1	45	2366
	SUN E.	79	53	18	2588	78	14	6	2581	76	34	45	2576	74	55	17	2569
28	α Aquilæ W.	66	25	8	3260	67	50	6	3230	69	15	39	3202	70	41	46	3177
	Fomalhaut W.	34	23	31	2883	35	56	12	2825	37	30	8	2774	39	5	10	2729
	α Arietis E.	36	20	39	2391	34	36	52	2402	32	53	20	2415	31	10	7	2433
	SUN E.	66	36	0	2544	64	55	48	2540	63	15	30	2536	61	35	7	2532
29	α Aquilæ W.	77	59	0	3084	79	27	29	3072	80	56	13	3061	82	25	10	3052
	Fomalhaut W.	47	13	9	2572	48	52	42	2550	50	32	46	2531	52	13	16	2514
	α Pegasi W.	31	0	21	3775	32	15	49	3621	33	34	1	3489	34	5	28	3375
	SUN E.	53	12	5	2520	51	31	19	2518	49	50	31	2517				2517
30	α Aquilæ W.	89	51	50	3037	91	21	17	3039	92	50	41	3021				3021
	Fomalhaut W.	60	40	48	2455	62	23	4	2448	64	5	30	24				24
	α Pegasi W.	42	5	24	2993	43	35	46	2943	45	7	10	2				2
	Jupiter W.	25	58	23	2249	27	45	37	2251	29	32	49					
	SUN E.	39	45	40	2522	38	4	58	2526	36	24	21					
31	α Aquilæ W.	101	44	6	3106	103	12	8	3124	104	39	4					
	Fomalhaut W.	74	22	8	2430	76	5	0	2431	77	47						
	α Pegasi W.	54	31	49	2729	56	7	50	2713	57	44						
	Jupiter W.	40	15	2	2268	42	1	48	2273	43	48						
	SUN E.	26	23	10	2572	24	43	37	2585	23	4						

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 16^h, MEAN TIME.

Day of the Month.	West.	East.
1		1. ○ 4 2. 3.
2		2. 3. ○ .1 4
3	3. .2 .1	○ 4
4	.3	○ 1. 2 4
5	.3 .1	○ 2. 4.
6	2.	○ 1. 3 4.
7	.1 ●	○ 3 4. ● .1
8		1. ○ 4. 2. 3.
9		4. 5. ○ 3. 1
10	4. 3. .1	○
11	4. 3	○ .1
12	4. 3 .1	○ 2.
13	.4 2.	○ .3 .1
14	.4 .2	○ 3 ● .1
15	.4 1.	○ 2. 3.
16	.4	○ .1 3. ○ 2.
17	.2 3. 1. .4	○
18	.3	○ 2. 1. 4
19	.3 .1	○ 2. 4
20	.3 ●	○ 1. 4.
21	.2 .1	○ 3 4.
22	1. ○	○ 2. 3. 4.
23		○ .1 3. 4.
24	.2 3. 1.	○ 4.
25	3.	○ .2 4.
26	.3 .1 4.	○ 2.
27	4. 2.	○ 1. ● .1
28	4. .2 .1	○ 3
29	4.	○ 1. 2. 3.
30	.4	○ 2. 3. ● .1
31	.4 2. 3.	○

This Table represents, at 16^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is *on the disc of Jupiter*, and a black circle (●) that it is either *behind the disc*, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^h .176271.	From Mean Noon of January 1.		
	At Mean Midnight,						Days.	Day of the Year.	Fraction of the Year.
	A	B	C	D					
1	-1.1454	-1.1335	+9.2374	-0.9279	21 18 6.62	40	121	.331	
2	1.1387	1.1416	9.2448	0.9271	21 14 10.71	41	122	.334	
3	1.1318	1.1494	9.2520	0.9263	21 10 14.80	42	123	.337	
4	-1.1247	-1.1569	+9.2593	-0.9256	21 6 18.89	43	124	.339	
5	1.1173	1.1642	9.2664	0.9248	21 2 22.98	44	125	.342	
6	1.1097	1.1713	9.2736	0.9240	20 58 27.07	45	126	.345	
7	-1.1018	-1.1781	+9.2807	-0.9232	20 54 31.16	46	127	.348	
8	1.0936	1.1847	9.2877	0.9224	20 50 35.25	47	128	.350	
9	1.0852	1.1911	9.2946	0.9217	20 46 39.34	48	129	.353	
10	-1.0765	-1.1972	+9.3016	-0.9209	20 42 43.43	49	130	.356	
11	1.0675	1.2031	9.3085	0.9201	20 38 47.51	50	131	.359	
12	1.0582	1.2089	9.3153	0.9194	20 34 51.60	51	132	.361	
13	-1.0485	-1.2144	+9.3221	-0.9186	20 30 55.69	52	133	.364	
14	1.0385	1.2197	9.3288	0.9179	20 26 59.78	53	134	.367	
15	1.0282	1.2249	9.3355	0.9171	20 23 3.87	54	135	.370	
16	-1.0175	-1.2299	+9.3421	-0.9164	20 19 7.96	55	136	.372	
17	1.0064	1.2346	9.3487	0.9157	20 15 12.05	56	137	.375	
18	0.9948	1.2393	9.3553	0.9150	20 11 16.14	57	138	.378	
19	-0.9829	-1.2437	+9.3618	-0.9143	20 7 20.23	58	139	.381	
20	0.9705	1.2480	9.3682	0.9136	20 3 24.31	59	140	.383	
21	0.9576	1.2521	9.3746	0.9130	19 59 28.40	60	141	.386	
22	-0.9441	-1.2560	+9.3809	-0.9123	19 55 32.49	61	142	.389	
23	0.9302	1.2598	9.3872	0.9117	19 51 36.58	62	143	.392	
24	0.9156	1.2634	9.3934	0.9111	19 47 40.67	63	144	.394	
25	-0.9004	-1.2669	+9.3996	-0.9105	19 43 44.76	64	145	.397	
26	0.8846	1.2703	9.4057	0.9099	19 39 48.85	65	146	.400	
27	0.8680	1.2735	9.4118	0.9094	19 35 52.94	66	147	.403	
28	-0.8506	-1.2765	+9.4179	-0.9088	19 31 57.03	67	148	.406	
29	0.8324	1.2794	9.4238	0.9083	19 27 61.12	68	149	.409	
30	0.8133	1.2822	9.4298	0.9079	19 23 65.21	69	150	.412	
31	0.7932	1.2848	9.4357	0.9074	19 19 69.30	70	151	.415	
32	-0.7720	-1.2873	+9.4415	-0.9070	19 15 73.39	71	152	.418	

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtr. from		Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.		added to Apparent Time.		
		h m s	s	o ' "	"	m s	m s	s	
Sun.	1	4 38 9.72	10.248	N.22 7 38.2	19.52	1 8.42	2 26.57	0.390	
Mon.	2	4 42 15.67	10.264	22 15 26.6	18.55	1 8.47	2 17.21	0.406	
Tues.	3	4 46 22.00	10.279	22 22 51.7	17.57	1 8.52	2 7.46	0.421	
Wed.	4	4 50 28.70	10.293	22 29 53.3	16.58	1 8.57	1 57.35	0.435	
Thur.	5	4 54 35.73	10.306	22 36 31.3	15.59	1 8.62	1 46.90	0.448	
Frid.	6	4 58 43.08	10.318	22 42 45.4	14.59	1 8.66	1 36.14	0.460	
Sat.	7	5 2 50.72	10.330	22 48 35.7	13.59	1 8.70	1 25.08	0.472	
Sun.	8	5 6 58.64	10.340	22 54 1.9	12.58	1 8.74	1 13.76	0.482	
Mon.	9	5 11 6.80	10.349	22 59 3.9	11.57	1 8.78	1 2.19	0.491	
Tues.	10	5 15 15.18	10.357	23 3 41.6	10.56	1 8.81	0 50.40	0.500	
Wed.	11	5 19 23.77	10.365	23 7 55.0	9.54	1 8.84	0 38.41	0.508	
Thur.	12	5 23 32.54	10.372	23 11 43.9	8.52	1 8.87	0 26.23	0.514	
Frid.	13	5 27 41.47	10.378	23 15 8.3	7.49	1 8.89	0 13.89	0.520	
Sat.	14	5 31 50.54	10.383	23 18 8.1	6.47	1 8.91	0 1.41	0.525	
Sun.	15	5 35 59.73	10.387	23 20 43.4	5.44	1 8.93	0 11.19	0.529	
Mon.	16	5 40 9.01	10.390	23 22 53.9	4.41	1 8.95	0 23.88	0.532	
Tues.	17	5 44 18.38	10.393	23 24 39.8	3.38	1 8.96	0 36.65	0.535	
Wed.	18	5 48 27.80	10.395	23 26 0.9	2.35	1 8.96	0 49.48	0.536	
Thur.	19	5 52 37.27	10.395	23 26 57.2	1.32	1 8.97	1 2.35	0.537	
Frid.	20	5 56 46.76	10.395	23 27 28.8	0.29	1 8.97	1 15.24	0.538	
Sat.	21	6 0 56.25	10.395	23 27 35.7	0.75	1 8.96	1 28.15	0.537	
Sun.	22	6 5 5.73	10.393	23 27 17.7	1.78	1 8.96	1 41.03	0.535	
Mon.	23	6 9 15.17	10.391	23 26 35.0	2.81	1 8.95	1 53.88	0.533	
Tues.	24	6 13 24.55	10.388	23 25 27.6	3.84	1 8.94	2 6.67	0.529	
Wed.	25	6 17 33.85	10.383	23 23 55.4	4.87	1 8.92	2 19.37	0.525	
Thur.	26	6 21 43.04	10.378	23 21 58.6	5.90	1 8.90	2 31.96	0.519	
Frid.	27	6 25 52.10	10.371	23 19 37.1	6.92	1 8.88	2 44.43	0.513	
Sat.	28	6 30 1.02	10.364	23 16 51.0	7.94	1 8.85	2 56.75	0.506	
Sun.	29	6 34 9.75	10.355	23 13 40.4	8.96	1 8.82	3 8.90	0.498	
Mon.	30	6 38 18.28	10.346	23 10 5.3	9.98	1 8.79	3 20.85	0.488	
Tues.	31	6 42 26.58		N.23 6 5.8		1 8.76	3 32.56		

* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to <u>subt. from Mean Time.</u>	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
<i>Sun.</i>	1	h m s 4 38 10.14	° ' " N.22 7 39.0	' " 15 48.0	m s 2 26.55	h m s 4 40 36.69
<i>Mon.</i>	2	4 42 16.06	22 15 27.3	15 47.9	2 17.19	4 44 33.25
<i>Tues.</i>	3	4 46 22.37	22 22 52.3	15 47.7	2 7.44	4 48 29.81
<i>Wed.</i>	4	4 50 29.03	22 29 53.8	15 47.6	1 57.34	4 52 26.37
<i>Thur.</i>	5	4 54 36.04	22 36 31.7	15 47.5	1 46.89	4 56 22.93
<i>Frid.</i>	6	4 58 43.35	22 42 45.8	15 47.4	1 36.13	5 0 19.48
<i>Sat.</i>	7	5 2 50.97	22 48 36.0	15 47.3	1 25.07	5 4 16.04
<i>Sun.</i>	8	5 6 58.85	22 54 2.1	15 47.2	1 13.75	5 8 12.60
<i>Mon.</i>	9	5 11 6.98	22 59 4.1	15 47.1	1 2.18	5 12 9.16
<i>Tues.</i>	10	5 15 15.33	23 3 41.8	15 47.0	0 50.39	5 16 5.72
<i>Wed.</i>	11	5 19 23.88	23 7 55.1	15 46.9	0 38.40	5 20 2.28
<i>Thur.</i>	12	5 23 32.62	23 11 44.0	15 46.8	0 26.22	5 23 58.84
<i>Frid.</i>	13	5 27 41.51	23 15 8.4	15 46.7	0 13.89	5 27 55.40
<i>Sat.</i>	14	5 31 50.54	23 18 8.2	15 46.7	0 1.41	5 31 51.95
<i>Sun.</i>	15	5 35 59.70	23 20 43.3	15 46.6	0 11.19	5 35 48.51
<i>Mon.</i>	16	5 40 8.94	23 22 53.9	15 46.5	0 23.87	5 39 45.07
<i>Tues.</i>	17	5 44 18.27	23 24 39.7	15 46.5	0 36.64	5 43 41.63
<i>Wed.</i>	18	5 48 27.66	23 26 0.8	15 46.4	0 49.47	5 47 38.19
<i>Thur.</i>	19	5 52 37.09	23 26 57.2	15 46.3	1 2.34	5 51 34.75
<i>Frid.</i>	20	5 56 46.54	23 27 28.8	15 46.3	1 15.23	5 55 31.31
<i>Sat.</i>	21	6 0 56.00	23 27 35.7	15 46.2	1 28.14	5 59 27.86
<i>Sun.</i>	22	6 5 5.44	23 27 17.8	15 46.2	1 41.02	6 3 24.42
<i>Mon.</i>	23	6 9 14.84	23 26 35.1	15 46.1	1 53.86	6 7 20.98
<i>Tues.</i>	24	6 13 24.19	23 25 27.7	15 46.1	2 6.65	6 11 17.54
<i>Wed.</i>	25	6 17 33.45	23 23 55.6	15 46.1		6 15 14.10
<i>Thur.</i>	26	6 21 42.60	23 21 58.9	15 46.0		6 19 10.61
<i>Frid.</i>	27	6 25 51.63	23 19 37.4	15 46.0		6 23 7.21
<i>Sat.</i>	28	6 30 0.51	23 16 51.4	15 46.0		6 27
<i>Sun.</i>	29	6 34 9.21	23 13 40.8	15 46.0		6 31
<i>Mon.</i>	30	6 38 17.71	23 10 5.8	15 46.0		6 34
<i>Tues.</i>	31	6 42 25.97	N.23 6 6.5	15		6 38

* The Semidiameter for Apparent Noon may be assumed

as No

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.	Noon.	Noon.	Midnight.	Noon.	Midnight.
1	71° 6' 31".3	N. 0° 01'	0.0062917	16° 11' 8"	16° 8' 6"	59° 26' 3"	59° 14' 4"
2	72° 3' 58".8	0° 12'	0.0063524	16° 4' 7"	16° 0' 1"	59° 0' 0"	58° 43' 4"
3	73° 1' 25".4	0° 22'	0.0064108	15° 55' 0"	15° 49' 5"	58° 24' 7"	58° 4' 5"
4	73° 58' 51".1	0° 29'	0.0064666	15° 43' 7"	15° 37' 6"	57° 43' 1"	57° 21' 0"
5	74° 56' 15".8	0° 33'	0.0065199	15° 31' 5"	15° 25' 5"	56° 58' 5"	56° 36' 2"
6	75° 53' 39".6	0° 35'	0.0065709	15° 19' 6"	15° 13' 9"	56° 14' 6"	55° 53' 9"
7	76° 51' 2".4	0° 33'	0.0066196	15° 8' 6"	15° 3' 8"	55° 34' 5"	55° 16' 7"
8	77° 48' 24".2	0° 29'	0.0066660	14° 59' 5"	14° 55' 8"	55° 0' 9"	54° 47' 2"
9	78° 45' 45".0	0° 21'	0.0067103	14° 52' 6"	14° 50' 2"	54° 35' 8"	54° 26' 8"
10	79° 43' 4".7	N. 0° 11'	0.0067524	14° 48' 4"	14° 47' 4"	54° 20' 3"	54° 16' 4"
11	80° 40' 23".5	0° 00'	0.0067926	14° 47' 0"	14° 47' 4"	54° 15' 1"	54° 16' 4"
12	81° 37' 41".4	S. 0° 13'	0.0068309	14° 48' 4"	14° 50' 0"	54° 20' 1"	54° 26' 2"
13	82° 34' 58".3	0° 26'	0.0068675	14° 52' 3"	14° 55' 2"	54° 34' 5"	54° 45' 0"
14	83° 32' 14".5	0° 39'	0.0069024	14° 58' 5"	15° 2' 3"	54° 57' 3"	55° 11' 3"
15	84° 29' 29".9	0° 50'	0.0069357	15° 6' 5"	15° 11' 1"	55° 26' 7"	55° 43' 3"
16	85° 26' 44".5	0° 61'	0.0069677	15° 15' 8"	15° 20' 7"	56° 0' 7"	56° 18' 6"
17	86° 23' 58".6	0° 69'	0.0069983	15° 25' 6"	15° 30' 6"	56° 36' 8"	56° 55' 0"
18	87° 21' 12".1	0° 75'	0.0070274	15° 35' 4"	15° 40' 1"	57° 12' 8"	57° 30' 0"
19	88° 18' 25".2	0° 77'	0.0070550	15° 44' 6"	15° 48' 7"	57° 46' 3"	58° 1' 6"
20	89° 15' 38".0	0° 77'	0.0070812	15° 52' 5"	15° 56' 0"	58° 15' 6"	58° 28' 2"
21	90° 12' 50".5	0° 74'	0.0071058	15° 59' 0"	16° 1' 7"	58° 39' 4"	58° 49' 2"
22	91° 10' 3".0	0° 68'	0.0071290	16° 3' 9"	16° 5' 8"	58° 57' 4"	59° 4' 2"
23	92° 7' 15".3	0° 59'	0.0071505	16° 7' 3"	16° 8' 4"	59° 9' 7"	59° 13' 7"
24	93° 4' 27".6	0° 48'	0.0071702	16° 9' 1"	16° 9' 5"	59° 16' 4"	59° 17' 8"
25	94° 1' 40".0	0° 35'	0.0071880	16° 9' 5"	16° 9' 2"	59° 17' 9"	59° 16' 8"
26	94° 58' 52".3	0° 21'	0.0072037	16° 8' 6"	16° 7' 6"	59° 14' 5"	59° 10' 9"
27	95° 56' 4".8	S. 0° 08'	0.0072173	16° 6' 3"	16° 4' 6"	59° 6' 0"	58° 59' 8"
28	96° 53' 17".5	N. 0° 05'	0.0072285	16° 2' 5"	16° 0' 0"	58° 52' 2"	58° 43' 1"
29	97° 50' 30".2	0° 17'	0.0072372	15° 57' 2"	15° 53' 9"	58° 32' 6"	58° 20' 7"
30	98° 47' 43".0	0° 27'	0.0072435	15° 50' 3"	15° 46' 4"	58° 7' 5"	57° 53' 1"
31	99° 44' 55".9	N. 0° 35'	0.0072472	15° 42' 2"	15° 37' 6"	57° 37' 5"	57° 20' 9"

Day of the Year.

Day of the Week.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SUNDAY 1.</i>				<i>TUESDAY 3.</i>			
	<i>h m s.</i>	<i>° ' "</i>	<i>"</i>		<i>h m s.</i>	<i>° ' "</i>	<i>"</i>
0	3 13 28.29	N.20 28 17.6	121.29	0	5 13 42.57	N.27 18 45.5	43.88
1	3 15 52.35	20 40 25.4	119.99	1	5 16 17.23	27 23 8.8	42.05
2	3 18 16.72	20 52 25.3	118.66	2	5 18 51.94	27 27 21.1	40.23
3	3 20 41.41	21 4 17.2	117.32	3	5 21 26.70	27 31 22.5	38.41
4	3 23 6.42	21 16 1.1	115.96	4	5 24 1.49	27 35 12.9	36.58
5	3 25 31.73	21 27 36.9	114.59	5	5 26 36.31	27 38 52.4	34.75
6	3 27 57.35	21 39 4.5	113.21	6	5 29 11.14	27 42 20.9	32.92
7	3 30 23.29	21 50 23.7	111.80	7	5 31 45.98	27 45 38.4	31.09
8	3 32 49.53	22 1 34.6	110.39	8	5 34 20.82	27 48 44.9	29.25
9	3 35 16.07	22 12 36.9	108.95	9	5 36 55.64	27 51 40.4	27.42
10	3 37 42.91	22 23 30.6	107.51	10	5 39 30.44	27 54 24.9	25.59
11	3 40 10.05	22 34 15.6	106.04	11	5 42 5.21	27 56 58.5	23.76
12	3 42 37.49	22 44 51.9	104.57	12	5 44 39.95	27 59 21.0	21.93
13	3 45 5.22	22 55 19.3	103.08	13	5 47 14.64	28 1 32.6	20.10
14	3 47 33.24	23 5 37.8	101.57	14	5 49 49.26	28 3 33.2	18.27
15	3 50 1.55	23 15 47.2	100.05	15	5 52 23.81	28 5 22.8	16.45
16	3 52 30.14	23 25 47.5	98.52	16	5 54 58.28	28 7 1.5	14.63
17	3 54 59.01	23 35 38.6	96.97	17	5 57 32.67	28 8 29.3	12.81
18	3 57 28.15	23 45 20.4	95.41	18	6 0 6.95	28 9 46.1	10.99
19	3 59 57.57	23 54 52.9	93.84	19	6 2 41.13	28 10 52.1	9.18
20	4 2 27.25	24 4 15.9	92.25	20	6 5 15.19	28 11 47.2	7.37
21	4 4 57.19	24 13 29.4	90.65	21	6 7 49.13	28 12 31.4	5.57
22	4 7 27.39	24 22 33.3	89.04	22	6 10 22.93	28 13 4.8	3.77
23	4 9 57.84	N.24 31 27.6	87.42	23	6 12 56.58	N.28 13 27.4	1.98
<i>MONDAY 2.</i>				<i>WEDNESDAY 4.</i>			
0	4 12 28.53	N.24 40 12.1	85.78	0	6 15 30.08	N.28 13 39.3	0.19
1	4 14 59.47	24 48 46.8	84.14	1	6 18 3.42	28 13 40.4	1.60
2	4 17 30.64	24 57 11.6	82.48	2	6 20 36.58	28 13 30.8	3.37
3	4 20 2.05	25 5 26.5	80.81	3	6 23 9.56	28 13 10.6	5.14
4	4 22 33.68	25 13 31.4	79.14	4	6 25 42.36	28 12 39.8	6.90
5	4 25 5.52	25 21 26.2	77.45	5	6 28 14.95	28 11 58.3	8.66
6	4 27 37.58	25 29 10.9	75.75	6	6 30 47.33	28 11 6.4	10.41
7	4 30 9.84	25 36 45.4	74.04	7	6 33 19.50	28 10 3.9	12.15
8	4 32 42.30	25 44 9.7	72.33	8	6 35 51.44	28 8 51.1	13.88
9	4 35 14.95	25 51 23.6	70.60	9	6 38 23.15	28 7 27.8	15.60
10	4 37 47.79	25 58 27.2	68.87	10	6 40 54.62	28 5 54.2	17.32
11	4 40 20.80	26 5 20.4	67.13	11	6 43 25.84	28 4 10.3	19.02
12	4 42 53.99	26 12 3.2	65.37	12	6 45 56.79	28 2 16.2	20.72
13	4 45 27.34	26 18 35.4	63.62	13	6 48 27.49	28 0 11.9	22.40
14	4 48 0.84	26 24 57.1	61.85	14	6 50 57.91	27 57 57.5	24.08
15	4 50 34.48	26 31 8.3	60.08	15	6 53 28.05	27 55 33.0	25.74
16	4 53 8.27	26 37 8.7	58.30	16	6 55 57.90	27 52 58.5	27.40
17	4 55 42.19	26 42 58.5	56.52	17	6 58 27.46	27 50 14.1	29.05
18	4 58 16.23	26 48 37.6	54.73	18	7 0 56.71	27 47 19.9	30.68
19	5 0 50.38	26 54 6.0	52.93	19	7 3 25.66	27 44 15.8	32.31
20	5 3 24.64	26 59 23.5	51.13	20	7 5 54.29	27 41 1.9	33.92
21	5 5 59.00	27 4 30.3	49.32	21	7 8 22.59	27 37 38.4	35.52
22	5 8 33.44	27 9 26.2	47.51	22	7 10 50.57	27 34 5.3	37.11
23	5 11 7.97	27 14 11.3	45.70	23	7 13 18.21	27 30 22.6	38.69
24	5 13 42.57	N.27 18 45.5		24	7 15 45.51	N.27 26 30.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Dif. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Dif. Dec. for 10 ^m .
<i>THURSDAY 5.</i>				<i>SATURDAY 7.</i>		
m s	o ' "	"		h m s	o ' "	"
15 45'51	N.27 26 30'5	40'26	0	9 5 42'69	N.21 41 7'4	99'57
18 12'46	27 22 29'0	41'81	1	9 7 49'68	21 31 10'0	100'47
20 39'07	27 18 18'1	43'35	2	9 9 56'24	21 21 7'2	101'35
23 5'31	27 13 58'0	44'88	3	9 12 2'39	21 10 59'1	102'23
25 31'19	27 9 28'7	46'40	4	9 14 8'13	21 0 45'7	103'09
27 56'70	27 4 50'3	47'90	5	9 16 13'46	20 50 27'2	103'94
30 21'84	27 0 2'9	49'39	6	9 18 18'38	20 40 3'5	104'77
32 46'60	26 55 6'5	50'87	7	9 20 22'89	20 29 34'9	105'59
35 10'98	26 50 1'3	52'34	8	9 22 27'00	20 19 1'4	106'40
37 34'97	26 44 47'3	53'79	9	9 24 30'70	20 8 22'9	107'20
39 58'58	26 39 24'5	55'23	10	9 26 34'02	19 57 39'7	107'99
42 21'78	26 33 53'1	56'66	11	9 28 36'93	19 46 51'8	108'76
44 44'59	26 28 13'2	58'07	12	9 30 39'45	19 35 59'2	109'53
47 6'99	26 22 24'8	59'46	13	9 32 41'59	19 25 2'0	110'28
49 28'99	26 16 28'0	60'85	14	9 34 43'34	19 14 0'4	111'01
51 50'58	26 10 22'9	62'22	15	9 36 44'71	19 2 54'3	111'74
54 11'75	26 4 9'6	63'57	16	9 38 45'70	18 51 43'9	112'45
56 32'51	25 57 48'2	64'92	17	9 40 46'32	18 40 29'2	113'16
58 52'86	25 51 18'7	66'25	18	9 42 46'56	18 29 10'2	113'85
1 12'78	25 44 41'2	67'56	19	9 44 46'43	18 17 47'1	114'53
3 32'28	25 37 55'8	68'86	20	9 46 45'94	18 6 20'0	115'20
5 51'36	25 31 2'7	70'15	21	9 48 45'09	17 54 48'8	115'86
8 10'01	25 24 1'8	71'42	22	9 50 43'87	17 43 13'6	116'50
10 28'23	N.25 16 53'3	72'68	23	9 52 42'30	N.17 31 34'6	117'14
<i>FRIDAY 6.</i>				<i>SUNDAY 8.</i>		
12 46'02	N.25 9 37'2	73'92	0	9 54 40'39	N.17 19 51'8	117'76
15 3'38	25 2 13'7	75'15	1	9 56 38'12	17 8 5'2	118'38
17 20'31	24 54 42'8	76'37	2	9 58 35'52	16 56 15'0	118'98
19 36'80	24 47 4'6	77'57	3	10 0 32'57	16 44 21'1	119'57
21 52'85	24 39 19'2	78'75	4	10 2 29'29	16 32 23'7	120'16
24 8'48	24 31 26'7	79'93	5	10 4 25'67	16 20 22'7	120'73
26 23'66	24 23 27'1	81'08	6	10 6 21'73	16 8 18'4	121'29
28 38'41	24 15 20'6	82'23	7	10 8 17'46	15 56 10'6	121'84
30 52'73	24 7 7'2	83'36	8	10 10 12'88	15 43 59'6	122'39
33 6'60	23 58 47'1	84'48	9	10 12 7'98	15 31 45'3	122'92
35 20'04	23 50 20'2	85'58	10	10 14 2'77	15 19 27'8	123'44
37 33'04	23 41 46'7	86'67	11	10 15 57'25	15 7 7'1	123'95
39 45'61	23 33 6'7	87'74	12	10 17 51'44	14 54 43'4	124'46
41 57'74	23 24 20'3	88'80	13	10 19 45'32	14 42 16'7	124'95
44 9'44	23 15 27'4	89'85	14	10 21 38'92	14 29 47'0	125'44
46 20'70	23 6 28'3	90'88	15	10 23 32'22	14 17 14'3	125'91
48 31'53	22 57 23'1	91'90	16	10 25 25'24	14 4 38'9	126'38
50 41'92	22 48 11'7	92'91	17	10 27 17'97	13 52 0'6	126'84
52 51'89	22 38 54'2	93'90	18	10 29 10'43	13 39 19'6	127'28
55 1'42	22 29 30'8	94'88	19	10 31 2'62	13 26 35'9	127'72
57 10'53	22 20 1'6	95'84	20	10 32 54'54	13 13 49'5	128'15
59 19'20	22 10 26'5	96'79	21	10 34 46'20	13 1 0'6	128'58
1 27'46	22 0 45'8	97'73	22	10 36 37'60	12 48 9'2	128'99
3 35'28	21 50 59'4	98'66	23	10 38 28'75	12 35 15'3	129'38
5 42'69	N.21 41 7'4		24	10 40 19'65	N.12 22 18'9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>MONDAY 9.</i>				<i>WEDNESDAY 11.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	10 40 19.65	N. 12 22 18.9	129.79	0	12 5 40.89	N. 1 28 47.5	
1	10 42 10.30	12 9 20.2	130.18	1	12 7 25.30	1 14 47.4	
2	10 44 0.72	11 56 19.1	130.56	2	12 9 9.69	1 0 46.9	
3	10 45 50.90	11 43 15.8	130.93	3	12 10 54.08	0 46 46.3	
4	10 47 40.85	11 30 10.2	131.29	4	12 12 38.46	0 32 45.4	
5	10 49 30.57	11 17 2.5	131.64	5	12 14 22.84	0 18 44.3	
6	10 51 20.07	11 3 52.6	131.99	6	12 16 7.23	N. 0 4 43.1	
7	10 53 9.35	10 50 40.7	132.33	7	12 17 51.62	S. 0 9 18.2	
8	10 54 58.42	10 37 26.7	132.66	8	12 19 36.03	0 23 19.5	
9	10 56 47.29	10 24 10.7	132.98	9	12 21 20.46	0 37 20.9	
10	10 58 35.94	10 10 52.8	133.30	10	12 23 4.91	0 51 22.2	
11	11 0 24.40	9 57 33.0	133.61	11	12 24 49.39	1 5 23.5	
12	11 2 12.67	9 44 11.4	133.90	12	12 26 33.90	1 19 24.7	
13	11 4 0.75	9 30 48.0	134.20	13	12 28 18.45	1 33 25.8	
14	11 5 48.64	9 17 22.8	134.48	14	12 30 3.04	1 47 26.7	
15	11 7 36.36	9 3 55.9	134.76	15	12 31 47.68	2 1 27.4	
16	11 9 23.89	8 50 27.4	135.03	16	12 33 32.37	2 15 27.8	
17	11 11 11.26	8 36 57.2	135.29	17	12 35 17.12	2 29 28.0	
18	11 12 58.46	8 23 25.4	135.55	18	12 37 1.92	2 43 27.8	
19	11 14 45.50	8 9 52.2	135.79	19	12 38 46.80	2 57 27.2	
20	11 16 32.39	7 56 17.4	136.04	20	12 40 31.74	3 11 26.2	
21	11 18 19.12	7 42 41.2	136.27	21	12 42 16.76	3 25 24.8	
22	11 20 5.70	7 29 3.6	136.50	22	12 44 1.86	3 39 22.9	
23	11 21 52.14	N. 7 15 24.6	136.72	23	12 45 47.05	S. 3 53 20.4	
<i>TUESDAY 10.</i>				<i>THURSDAY 12.</i>			
0	11 23 38.45	N. 7 1 44.3	136.93	0	12 47 32.32	S. 4 7 17.4	
1	11 25 24.62	6 48 2.7	137.14	1	12 49 17.69	4 21 13.7	
2	11 27 10.67	6 34 19.9	137.33	2	12 51 3.16	4 35 9.4	
3	11 28 56.59	6 20 35.9	137.53	3	12 52 48.73	4 49 4.4	
4	11 30 42.39	6 6 50.8	137.71	4	12 54 34.41	5 2 58.6	
5	11 32 28.08	5 53 4.5	137.89	5	12 56 20.20	5 16 52.0	
6	11 34 13.66	5 39 17.1	138.06	6	12 58 6.11	5 30 44.6	
7	11 35 59.14	5 25 28.8	138.23	7	12 59 52.15	5 44 36.4	
8	11 37 44.52	5 11 39.4	138.38	8	13 1 38.31	5 58 27.2	
9	11 39 29.80	4 57 49.1	138.54	9	13 3 24.60	6 12 17.1	
10	11 41 14.99	4 43 57.9	138.68	10	13 5 11.03	6 26 5.9	
11	11 43 0.10	4 30 5.8	138.82	11	13 6 57.60	6 39 53.8	
12	11 44 45.13	4 16 12.9	138.95	12	13 8 44.32	6 53 40.5	
13	11 46 30.08	4 2 19.2	139.08	13	13 10 31.19	7 7 26.1	
14	11 48 14.96	3 48 24.7	139.19	14	13 12 18.20	7 21 10.5	
15	11 49 59.77	3 34 29.6	139.31	15	13 14 5.38	7 34 53.8	
16	11 51 44.53	3 20 33.7	139.41	16	13 15 52.73	7 48 35.7	
17	11 53 29.22	3 6 37.3	139.51	17	13 17 40.24	8 2 16.3	
18	11 55 13.86	2 52 40.2	139.60	18	13 19 27.92	8 15 55.6	
19	11 56 58.46	2 38 42.6	139.69	19	13 21 15.79	8 29 33.5	
20	11 58 43.01	2 24 44.4	139.77	20	13 23 3.84	8 43 9.9	
21	12 0 27.53	2 10 45.8	139.84	21	13 24 52.07	8 56 44.8	
22	12 2 12.01	1 56 46.8	139.91	22	13 26 40.50	9 10 18.1	
23	12 3 56.46	1 42 47.3	139.97	23	13 28 29.12	9 23 49.9	
24	12 5 40.89	N. 1 28 47.5		24	13 30 17.95	S. 9 37 20.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>FRIDAY 13.</i>				<i>SUNDAY 15.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	13 30 17.95	S. 9 37 20.0	134.74	0	15 2 42.94	S. 19 35 4.5	109.79
1	13 32 6.98	9 50 48.4	134.44	1	15 4 46.76	19 46 3.2	108.99
2	13 33 56.22	10 4 15.1	134.15	2	15 6 50.97	19 56 57.2	108.18
3	13 35 45.68	10 17 40.0	133.84	3	15 8 55.58	20 7 46.2	107.36
4	13 37 35.35	10 31 3.0	133.52	4	15 11 0.58	20 18 30.4	106.52
5	13 39 25.25	10 44 24.1	133.20	5	15 13 5.99	20 29 9.5	105.68
6	13 41 15.38	10 57 43.3	132.86	6	15 15 11.80	20 39 43.6	104.81
7	13 43 5.74	11 11 0.5	132.52	7	15 17 18.02	20 50 12.5	103.94
8	13 44 56.34	11 24 15.6	132.17	8	15 19 24.64	21 0 36.1	103.05
9	13 46 47.18	11 37 28.6	131.81	9	15 21 31.67	21 10 54.4	102.15
0	13 48 38.27	11 50 39.5	131.44	10	15 23 39.12	21 21 7.3	101.24
1	13 50 29.60	12 3 48.1	131.06	11	15 25 46.97	21 31 14.7	100.31
2	13 52 21.19	12 16 54.5	130.68	12	15 27 55.24	21 41 16.6	99.36
3	13 54 13.04	12 29 58.6	130.28	13	15 30 3.93	21 51 12.8	98.41
4	13 56 5.15	12 43 0.2	129.87	14	15 32 13.03	22 1 3.2	97.44
5	13 57 57.53	12 55 59.5	129.46	15	15 34 22.55	22 10 47.9	96.46
6	13 59 50.19	13 8 56.2	129.03	16	15 36 32.49	22 20 26.6	95.46
7	14 1 43.12	13 21 50.4	128.60	17	15 38 42.85	22 29 59.4	94.45
8	14 3 36.33	13 34 42.0	128.15	18	15 40 53.64	22 39 26.0	93.42
9	14 5 29.83	13 47 31.0	127.70	19	15 43 4.84	22 48 46.6	92.38
10	14 7 23.61	14 0 17.2	127.24	20	15 45 16.46	22 58 0.9	91.33
11	14 9 17.69	14 13 0.6	126.76	21	15 47 28.51	23 7 8.9	90.26
12	14 11 12.07	14 25 41.1	126.28	22	15 49 40.98	23 16 10.4	89.18
13	14 13 6.75	S. 14 38 18.8	125.78	23	15 51 53.87	S. 23 25 5.5	88.09
<i>SATURDAY 14.</i>				<i>MONDAY 16.</i>			
0	14 15 1.73	S. 14 50 53.5	125.28	0	15 54 7.18	S. 23 33 54.1	86.98
1	14 16 57.02	15 3 25.2	124.76	1	15 56 20.92	23 42 36.0	85.86
2	14 18 52.63	15 15 53.7	124.23	2	15 58 35.07	23 51 11.2	84.72
3	14 20 48.56	15 28 19.1	123.70	3	16 0 49.65	23 59 39.5	83.57
4	14 22 44.80	15 40 41.3	123.15	4	16 3 4.66	24 8 0.9	82.41
5	14 24 41.38	15 53 0.2	122.59	5	16 5 20.08	24 16 15.4	81.23
6	14 26 38.28	16 5 15.8	122.02	6	16 7 35.92	24 24 22.7	80.03
7	14 28 35.52	16 17 27.9	121.44	7	16 9 52.17	24 32 22.9	78.82
8	14 30 33.09	16 29 36.5	120.85	8	16 12 8.85	24 40 15.9	77.60
9	14 32 31.00	16 41 41.6	120.25	9	16 14 25.94	24 48 1.5	76.37
10	14 34 29.26	16 53 43.1	119.63	10	16 16 43.44	24 55 39.7	75.12
11	14 36 27.87	17 5 40.9	119.00	11	16 19 1.36	25 3 10.4	73.85
12	14 38 26.83	17 17 34.9	118.37	12	16 21 10.60	25 10 33.5	72.58
13	14 40 26.14	17 29 25.1	117.72	13	16	17 49.0	71.28
14	14 42 25.81	17 41 11.4	117.06	14		24 56.6	69.98
15	14 44 25.85	17 52 53.7	116.38	15		31 56.5	68.66
16	14 46 26.25	18 4 32.0	115.70	16		38 48.4	67.32
17	14 48 27.02	18 16 6.2	115.00	17		45 45.32.4	65.98
18	14 50 28.15	18 27 36.3	114.29	18		52 8.2	64.61
19	14 52 29.67	18 39 2.0	113.57			58 35.9	63.24
20	14 54 31.56	18 50 23.5	112.84			6 55.4	61.85
21	14 56 33.83	19 1 40.5	112.10			6.5	60.45
22	14 58 36.48	19 12 53.1	111.34			9.2	59.04
23	15 0 39.52	19 24 1.1	110.57			14.4	57.61
24	15 2 42.94	S. 19 35 4.5				1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>TUESDAY 17.</i>				<i>THURSDAY 19.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	16 49 30.70	S. 26 28 49.1	56.17	0	18 49 15.03	S. 27 56 45.2	
1	16 51 54.11	26 34 26.1	54.72	1	18 51 48.15	27 54 21.3	
2	16 54 17.88	26 39 54.5	53.25	2	18 54 21.26	27 51 46.7	
3	16 56 42.02	26 45 14.0	51.77	3	18 56 54.36	27 49 1.3	
4	16 59 6.51	26 50 24.6	50.29	4	18 59 27.43	27 46 5.3	
5	17 1 31.35	26 55 26.3	48.78	5	19 2 0.46	27 42 58.6	
6	17 3 56.53	27 0 19.0	47.27	6	19 4 33.46	27 39 41.2	
7	17 6 22.05	27 5 2.7	45.74	7	19 7 6.40	27 36 13.2	
8	17 8 47.91	27 9 37.1	44.21	8	19 9 39.28	27 32 34.5	
9	17 11 14.10	27 14 2.4	42.66	9	19 12 12.09	27 28 45.2	
10	17 13 40.61	27 18 18.3	41.10	10	19 14 44.83	27 24 45.3	
11	17 16 7.43	27 22 24.9	39.53	11	19 17 17.47	27 20 34.8	
12	17 18 34.56	27 26 22.1	37.95	12	19 19 50.03	27 16 13.7	
13	17 21 2.01	27 30 9.8	36.36	13	19 22 22.48	27 11 42.1	
14	17 23 29.75	27 33 47.9	34.75	14	19 24 54.82	27 7 0.0	
15	17 25 57.78	27 37 16.4	33.14	15	19 27 27.04	27 2 7.4	
16	17 28 26.10	27 40 35.3	31.51	16	19 29 59.14	26 57 4.3	
17	17 30 54.69	27 43 44.3	29.88	17	19 32 31.09	26 51 50.9	
18	17 33 23.55	27 46 43.6	28.24	18	19 35 2.91	26 46 27.1	
19	17 35 52.68	27 49 33.1	26.59	19	19 37 34.57	26 40 53.0	
20	17 38 22.06	27 52 12.6	24.93	20	19 40 6.08	26 35 8.6	
21	17 40 51.70	27 54 42.1	23.26	21	19 42 37.42	26 29 14.0	
22	17 43 21.57	27 57 1.7	21.58	22	19 45 8.59	26 23 9.1	
23	17 45 51.67	S. 27 59 11.2	19.89	23	19 47 39.57	S. 26 16 54.1	
<i>WEDNESDAY 18.</i>				<i>FRIDAY 20.</i>			
0	17 48 21.99	S. 28 1 10.5	18.19	0	19 50 10.37	S. 26 10 29.0	
1	17 50 52.54	28 2 59.7	16.49	1	19 52 40.98	26 3 53.8	
2	17 53 23.29	28 4 38.6	14.78	2	19 55 11.39	25 57 8.7	
3	17 55 54.24	28 6 7.3	13.07	3	19 57 41.59	25 50 13.6	
4	17 58 25.39	28 7 25.7	11.34	4	20 0 11.58	25 43 8.6	
5	18 0 56.72	28 8 33.8	9.62	5	20 2 41.35	25 35 53.8	
6	18 3 28.22	28 9 31.5	7.88	6	20 5 10.90	25 28 29.1	
7	18 5 59.89	28 10 18.8	6.14	7	20 7 40.22	25 20 54.8	
8	18 8 31.72	28 10 55.6	4.40	8	20 10 9.31	25 13 10.8	
9	18 11 3.69	28 11 22.0	2.65	9	20 12 38.15	25 5 17.2	
10	18 13 35.81	28 11 37.9	0.89	10	20 15 6.75	24 57 14.1	
11	18 16 8.05	28 11 43.2	0.87	11	20 17 35.10	24 49 1.5	
12	18 18 40.42	28 11 38.0	2.63	12	20 20 3.19	24 40 39.5	
13	18 21 12.91	28 11 22.2	4.40	13	20 22 31.02	24 32 8.2	
14	18 23 45.49	28 10 55.8	6.17	14	20 24 58.60	24 23 27.5	
15	18 26 18.17	28 10 18.8	7.94	15	20 27 25.90	24 14 37.7	
16	18 28 50.94	28 9 31.1	9.72	16	20 29 52.93	24 5 38.8	
17	18 31 23.78	28 8 32.8	11.50	17	20 32 19.68	23 56 30.9	
18	18 33 56.69	28 7 23.8	13.28	18	20 34 46.16	23 47 13.9	
19	18 36 29.65	28 6 4.1	15.06	19	20 37 12.34	23 37 48.1	
20	18 39 2.67	28 4 33.7	16.85	20	20 39 38.25	23 28 13.4	
21	18 41 35.72	28 2 52.7	18.63	21	20 42 3.86	23 18 30.0	
22	18 44 8.80	28 1 0.9	20.41	22	20 44 29.18	23 8 37.9	
23	18 46 41.91	27 58 58.4	22.20	23	20 46 54.21	22 58 37.2	
24	18 49 15.03	S. 27 56 45.2		24	20 49 18.93	S. 22 48 28.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SATURDAY 21.</i>				<i>MONDAY 23.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	20 49 18.93	S. 22 48 28.0	102.93	0	22 39 8.29	S. 12 23 2.3	152.81
1	20 51 43.36	22 38 10.4	104.33	1	22 41 18.73	12 7 45.4	153.47
2	20 54 7.48	22 27 44.4	105.70	2	22 43 28.94	11 52 24.6	154.11
3	20 56 31.30	22 17 10.2	107.07	3	22 45 38.92	11 36 59.9	154.74
4	20 58 54.81	22 6 27.8	108.42	4	22 47 48.68	11 21 31.5	155.36
5	21 1 18.01	21 55 37.3	109.75	5	22 49 58.23	11 5 59.3	155.96
6	21 3 40.91	21 44 38.8	111.07	6	22 52 7.56	10 50 23.6	156.54
7	21 6 3.50	21 33 32.4	112.38	7	22 54 16.69	10 34 44.3	157.11
8	21 8 25.77	21 22 18.1	113.67	8	22 56 25.62	10 19 1.7	157.66
9	21 10 47.73	21 10 56.1	114.95	9	22 58 34.34	10 3 15.7	158.20
10	21 13 9.38	20 59 26.4	116.21	10	23 0 42.87	9 47 26.5	158.73
11	21 15 30.72	20 47 49.2	117.46	11	23 2 51.22	9 31 34.1	159.23
12	21 17 51.74	20 36 4.4	118.69	12	23 4 59.37	9 15 38.7	159.73
13	21 20 12.45	20 24 12.2	119.91	13	23 7 7.35	8 59 40.3	160.20
14	21 22 32.84	20 12 12.8	121.11	14	23 9 15.15	8 43 39.1	160.67
15	21 24 52.92	20 0 6.1	122.30	15	23 11 22.79	8 27 35.1	161.12
16	21 27 12.68	19 47 52.3	123.47	16	23 13 30.25	8 11 28.4	161.55
17	21 29 32.13	19 35 31.4	124.63	17	23 15 37.56	7 55 19.1	161.97
18	21 31 51.27	19 23 3.6	125.77	18	23 17 44.71	7 39 7.3	162.37
19	21 34 10.09	19 10 29.0	126.90	19	23 19 51.72	7 22 53.1	162.76
20	21 36 28.61	18 57 47.6	128.01	20	23 21 58.57	7 6 36.6	163.13
21	21 38 46.81	18 44 59.5	129.11	21	23 24 5.29	6 50 17.8	163.49
22	21 41 4.71	18 32 4.9	130.19	22	23 26 11.87	6 33 56.9	163.83
23	21 43 22.30	S. 18 19 3.7	131.25	23	23 28 18.32	S. 6 17 33.9	164.16
<i>SUNDAY 22.</i>				<i>TUESDAY 24.</i>			
0	21 45 39.58	S. 18 5 56.2	132.30	0	23 30 24.65	S. 6 1 8.9	164.48
1	21 47 56.55	17 52 42.4	133.33	1	23 32 30.86	5 44 42.0	164.78
2	21 50 13.22	17 39 22.4	134.35	2	23 34 36.96	5 28 13.4	165.06
3	21 52 29.59	17 25 56.3	135.35	3	23 36 42.94	5 11 43.0	165.33
4	21 54 45.66	17 12 24.2	136.34	4	23 38 48.83	4 55 11.1	165.58
5	21 57 1.43	16 58 46.1	137.31	5	23 40 54.62	4 38 37.6	165.82
6	21 59 16.91	16 45 2.2	138.27	6	23 43 0.31	4 22 2.6	166.05
7	22 1 32.10	16 31 12.6	139.21	7	23 45 5.92	4 5 26.3	166.26
8	22 3 47.00	16 17 17.4	140.13	8	23 47 11.44	3 48 48.7	166.46
9	22 6 1.61	16 3 16.6	141.04	9	23 49 16.89	3 32 10.0	166.64
10	22 8 15.93	15 49 10.3	141.94	10	23 51 22.26	3 15 30.2	166.81
11	22 10 29.97	15 34 58.7	142.82	11	23 53 27.57	2 58 49.3	166.96
12	22 12 43.74	15 20 41.8	143.68	12	23 55 32.82	2 42 7.6	167.10
13	22 14 57.23	15 6 19.7	144.52	13	23 57 38.01	25.0	167.22
14	22 17 10.44	14 51 52.6	145.36	14	23 59 43.16	41.7	167.33
15	22 19 23.39	14 37 20.5	146.17	15	0 1 48.26	57.8	167.42
16	22 21 36.07	14 22 43.4	146.97	16	0 3 53.32	13.3	167.50
17	22 23 48.48	14 8 1.6	147.75	17	0 5 58.3	28.3	167.57
18	22 26 0.63	13 53 15.1	148.52	18	0 8 3	42.9	167.62
19	22 28 12.53	13 38 23.9	149.28	19	0 10 1	7.2	167
20	22 30 24.17	13 23 28.3	150.01	20	0 12 1	1.3	167
21	22 32 35.57	13 8 28.2	150.74	21	0 14 1	5.2	167
22	22 34 46.72	12 53 23.8	151.44	22	0 16 1	20.9	167
23	22 36 57.62	12 38 15.1	152.14	23	0 18 1	6.9	167
24	22 39 8.29	S. 12 23 2.3		24	0 2	52.9	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>WEDNESDAY 25.</i>				<i>FRIDAY 27.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	0 20 33.09	N. 0 38 52.9	167.62	0	2 2 22.35	N. 13 32 34.2	
1	0 22 38.05	0 55 38.6	167.57	1	2 4 33.99	13 47 26.2	
2	0 24 43.03	1 12 24.1	167.51	2	2 6 45.89	14 2 13.5	
3	0 26 48.03	1 29 9.1	167.43	3	2 8 58.04	14 16 56.2	
4	0 28 53.06	1 45 53.7	167.34	4	2 11 10.45	14 31 34.2	
5	0 30 58.12	2 2 37.7	167.23	5	2 13 23.12	14 46 7.3	
6	0 33 3.22	2 19 21.0	167.11	6	2 15 36.06	15 0 35.4	
7	0 35 8.37	2 36 3.7	166.97	7	2 17 49.27	15 14 58.5	
8	0 37 13.56	2 52 45.5	166.82	8	2 20 2.75	15 29 16.4	
9	0 39 18.81	3 9 26.4	166.65	9	2 22 16.50	15 43 29.1	
10	0 41 24.12	3 26 6.3	166.47	10	2 24 30.54	15 57 36.5	
11	0 43 29.50	3 42 45.1	166.28	11	2 26 44.85	16 11 38.5	
12	0 45 34.95	3 59 22.8	166.07	12	2 28 59.45	16 25 35.0	
13	0 47 40.48	4 15 59.2	165.85	13	2 31 14.34	16 39 25.9	
14	0 49 46.09	4 32 34.3	165.61	14	2 33 29.51	16 53 11.1	
15	0 51 51.78	4 49 7.9	165.35	15	2 35 44.98	17 6 50.4	
16	0 53 57.57	5 5 40.1	165.09	16	2 38 0.74	17 20 23.9	
17	0 56 3.46	5 22 10.6	164.80	17	2 40 16.80	17 33 51.5	
18	0 58 9.45	5 38 39.4	164.51	18	2 42 33.16	17 47 13.0	
19	1 0 15.55	5 55 6.4	164.19	19	2 44 49.81	18 0 28.3	
20	1 2 21.77	6 11 31.6	163.87	20	2 47 6.77	18 13 37.3	
21	1 4 28.10	6 27 54.8	163.53	21	2 49 24.03	18 26 40.0	
22	1 6 34.56	6 44 16.0	163.17	22	2 51 41.59	18 39 36.3	
23	1 8 41.15	N. 7 0 35.0	162.80	23	2 53 59.46	N. 18 52 26.1	
<i>THURSDAY 26.</i>				<i>SATURDAY 28.</i>			
0	1 10 47.87	N. 7 16 51.8	162.41	0	2 56 17.63	N. 19 5 9.2	
1	1 12 54.74	7 33 6.3	162.01	1	2 58 36.12	19 17 45.6	
2	1 15 1.74	7 49 18.4	161.60	2	3 0 54.91	19 30 15.3	
3	1 17 8.90	8 5 27.9	161.17	3	3 3 14.02	19 42 38.0	
4	1 19 16.22	8 21 34.9	160.72	4	3 5 33.43	19 54 53.8	
5	1 21 23.69	8 37 39.3	160.26	5	3 7 53.16	20 7 2.5	
6	1 23 31.33	8 53 40.8	159.79	6	3 10 13.20	20 19 4.0	
7	1 25 39.14	9 9 39.5	159.30	7	3 12 33.56	20 30 58.3	
8	1 27 47.12	9 25 35.3	158.79	8	3 14 54.22	20 42 45.2	
9	1 29 55.28	9 41 28.1	158.27	9	3 17 15.20	20 54 24.7	
10	1 32 3.63	9 57 17.7	157.74	10	3 19 36.49	21 5 56.7	
11	1 34 12.16	10 13 4.1	157.19	11	3 21 58.09	21 17 21.1	
12	1 36 20.89	10 28 47.2	156.62	12	3 24 20.00	21 28 37.8	
13	1 38 29.82	10 44 26.9	156.04	13	3 26 42.22	21 39 46.7	
14	1 40 38.95	11 0 3.2	155.45	14	3 29 4.76	21 50 47.8	
15	1 42 48.28	11 15 35.9	154.84	15	3 31 27.60	22 1 40.8	
16	1 44 57.83	11 31 4.9	154.21	16	3 33 50.75	22 12 25.9	
17	1 47 7.60	11 46 30.1	153.57	17	3 36 14.20	22 23 2.8	
18	1 49 17.58	12 1 51.5	152.91	18	3 38 37.95	22 33 31.5	
19	1 51 27.79	12 17 9.0	152.24	19	3 41 2.01	22 43 52.0	
20	1 53 38.23	12 32 22.5	151.56	20	3 43 26.37	22 54 4.0	
21	1 55 48.90	12 47 31.8	150.85	21	3 45 51.02	23 4 7.6	
22	1 57 59.81	13 2 36.9	150.14	22	3 48 15.97	23 14 2.7	
23	2 0 10.96	13 17 37.8	149.40	23	3 50 41.21	23 23 49.2	
24	2 2 22.35	N. 13 32 34.2		24	3 53 6.73	N. 23 33 27.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SUNDAY 29.</i>				<i>MONDAY 30.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	3 53 6.73	N.23 33 27.0	94.84	0	4 52 35.92	N.26 38 4.3	56.45
1	3 55 32.55	23 42 56.0	93.36	1	4 55 7.26	26 43 43.0	54.74
2	3 57 58.65	23 52 16.2	91.88	2	4 57 38.75	26 49 11.4	53.02
3	4 0 25.03	24 1 27.5	90.38	3	5 0 10.38	26 54 29.5	51.29
4	4 2 51.69	24 10 29.7	88.87	4	5 2 42.16	26 59 37.3	49.56
5	4 5 18.62	24 19 22.9	87.34	5	5 5 14.06	27 4 34.7	47.83
6	4 7 45.82	24 28 7.0	85.81	6	5 7 46.09	27 9 21.6	46.08
7	4 10 13.29	24 36 41.8	84.26	7	5 10 18.24	27 13 58.1	44.34
8	4 12 41.01	24 45 7.4	82.71	8	5 12 50.49	27 18 24.1	42.59
9	4 15 8.99	24 53 23.7	81.14	9	5 15 22.84	27 22 39.7	40.83
10	4 17 37.23	25 1 30.5	79.56	10	5 17 55.28	27 26 44.6	39.07
11	4 20 5.71	25 9 27.9	77.97	11	5 20 27.81	27 30 39.1	37.31
12	4 22 34.43	25 17 15.7	76.37	12	5 23 0.41	27 34 22.9	35.53
13	4 25 3.39	25 24 53.9	74.76	13	5 25 33.08	27 37 56.1	33.76
14	4 27 32.58	25 32 22.5	73.14	14	5 28 5.80	27 41 18.7	31.99
15	4 30 2.00	25 39 41.3	71.51	15	5 30 38.57	27 44 30.7	30.22
16	4 32 31.64	25 46 50.4	69.87	16	5 33 11.38	27 47 32.0	28.44
17	4 35 1.49	25 53 49.6	68.22	17	5 35 44.21	27 50 22.6	26.66
18	4 37 31.55	26 0 38.9	66.56	18	5 38 17.07	27 53 2.6	24.89
19	4 40 1.81	26 7 18.3	64.90	19	5 40 49.94	27 55 31.9	23.11
20	4 42 32.26	26 13 47.7	63.22	20	5 43 22.82	27 57 50.5	21.33
21	4 45 2.91	26 20 7.0	61.54	21	5 45 55.69	27 59 58.5	19.55
22	4 47 33.74	26 26 16.2	59.85	22	5 48 28.54	28 1 55.8	17.77
23	4 50 4.74	26 32 15.4	58.15	23	5 51 1.37	28 3 42.4	15.99
24	4 52 35.92	N.26 38 4.3		24	5 53 34.16	N.28 5 18.3	

PHASES OF THE MOON.

●	New Moon	- - - - -	d h m
☾	First Quarter	- - - - -	10 1 50.1
☽	Full Moon	- - - - -	" "
☾	Last Quarter	- - - - -	" "

☾	Apogee	- - - - -
☾	Perigee	- - - - -

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
4	SUN W.	20 0 35	2901	21 32 52	2905	23 5 4	2913	24 37 6	2921
	Regulus E.	54 30 9	2515	52 49 16	2530	51 8 45	2545	49 28 34	2561
	Mars E.	92 19 58	2580	90 40 36	2595	89 1 34	2611	87 22 54	2626
	Spica ♀ E.	108 30 54	2504	106 49 46	2518	105 8 58	2533	103 28 31	2548
5	SUN W.	32 13 55	2983	33 44 29	2997	35 14 46	3011	36 44 45	3025
	Regulus E.	41 13 9	2642	39 35 11	2658	37 57 35	2673	36 20 22	2689
	Mars E.	79 14 47	2705	77 38 13	2721	76 2 1	2736	74 26 9	2752
	Spica ♀ E.	95 11 21	2622	93 32 56	2638	91 54 53	2653	90 17 10	2668
6	SUN W.	44 10 12	3100	45 38 22	3114	47 6 15	3129	48 33 50	3143
	Regulus E.	28 20 9	2783	26 45 19	2803	25 10 55	2824	23 36 58	2845
	Mars E.	66 32 3	2831	64 58 15	2845	63 24 46	2861	61 51 37	2876
	Spica ♀ E.	82 13 38	2743	80 37 55	2757	79 2 31	2772	77 27 27	2786
7	SUN W.	55 47 23	3214	57 13 15	3227	58 38 52	3241	60 4 13	3254
	Pollux W.	21 14 48	2863	22 47 54	2874	24 20 46	2885	25 53 24	2897
	Mars E.	54 10 35	2948	52 39 17	2961	51 8 15	2975	49 37 31	2988
	Spica ♀ E.	69 36 38	2855	68 3 21	2868	66 30 21	2880	64 57 36	2893
	Antares E.	115 30 6	2852	113 56 45	2865	112 23 41	2877	110 50 53	2890
8	SUN W.	67 7 17	3313	68 31 13	3324	69 54 57	3335	71 18 28	3345
	Pollux W.	33 33 0	2950	35 4 16	2960	36 35 19	2969	38 6 10	2978
	Mars E.	42 7 42	3047	40 38 28	3058	39 9 27	3069	37 40 40	3078
	Spica ♀ E.	57 17 42	2950	55 46 26	2959	54 15 22	2969	52 44 31	2979
	Antares E.	103 10 38	2946	101 39 17	2956	100 8 9	2966	98 37 13	2975
9	SUN W.	78 13 23	3388	79 35 53	3395	80 58 15	3402	82 20 29	3408
	Pollux W.	45 37 46	3018	47 7 37	3024	48 37 20	3030	50 6 55	3036
	Mars E.	30 19 37	3124	28 51 56	3131	27 24 24	3139	25 57 2	3145
	Spica ♀ E.	45 13 5	3021	43 43 18	3027	42 13 39	3034	40 44 9	3041
	Antares E.	91 5 18	3015	89 35 24	3022	88 5 38	3028	86 36 0	3034
10	SUN W.	89 10 3	3433	90 31 42	3436	91 53 18	3439	93 14 50	3441
	Pollux W.	57 33 15	3057	59 2 17	3061	60 31 14	3063	62 0 9	3065
	Regulus W.	21 10 48	3123	22 38 30	3118	24 6 18	3114	25 34 11	3110
	Spica ♀ E.	33 18 24	3066	31 49 33	3069	30 20 46	3073	28 52 4	3077
	Antares E.	79 9 29	3056	77 40 25	3060	76 11 26	3062	74 42 30	3064
	α Aquilæ E.	123 3 28	4348	121 57 20	4309	120 50 36	4274	119 43 19	4240
11	SUN W.	100 2 5	3445	101 23 31	3445	102 44 57	3443	104 6 25	3442
	Pollux W.	69 24 16	3068	70 53 5	3067	72 21 55	3066	73 50 46	3064
	Regulus W.	32 54 30	3097	34 22 43	3093	35 51 1	3090	37 19 23	3087
	Antares E.	67 18 14	3067	65 49 24	3066	64 20 33	3065	62 51 40	3064
	α Aquilæ E.	113 59 35	4100	112 49 33	4077	111 39 9	4055	110 28 23	4034
12	SUN W.	110 54 22	3426	112 16 9	3422	113 38 1	3416	114 59 59	3411
	Pollux W.	81 15 46	3048	82 44 59	3044	84 14 17	3039	85 43 41	3034
	Regulus W.	44 42 22	3065	46 11 14	3060	47 40 13	3054	49 9 19	3048
	Antares E.	55 26 34	3048	53 57 21	3043	52 28 2	3038	50 58 36	3034
	α Aquilæ E.	104 29 46	3944	103 17 11	3928	102 4 20	3913	100 51 13	3900
13	SUN W.	121 51 27	3378	123 14 8	3371	124 36 57	3364	125 59 55	3355
	Regulus W.	56 36 49	3013	58 6 45	3005	59 36 52	2997	61 7 9	2988

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.	
4	SUN	W.	26 8 56	2933	27 40 33	2944	29 11 56	2957	30 43 3	2969
	Regulus	E.	47 48 45	2577	46 9 18	2593	44 30 13	2609	42 51 30	2625
	Mars	E.	85 44 34	2641	84 6 35	2657	82 28 58	2673	80 51 42	2689
	Spica η	E.	101 48 24	2562	100 8 37	2577	98 29 11	2592	96 50 5	2608
5	SUN	W.	38 14 27	3040	39 43 50	3054	41 12 56	3069	42 41 43	3084
	Regulus	E.	34 43 33	2710	33 7 6	2728	31 31 3	2746	29 55 24	2764
	Mars	E.	72 50 38	2769	71 15 29	2784	69 40 40	2799	68 6 11	2815
	Spica η	E.	88 39 47	2683	87 2 45	2698	85 26 2	2713	83 49 40	2728
6	SUN	W.	50 1 7	3158	51 28 6	3172	52 54 49	3187	54 21 14	3200
	Regulus	E.	22 3 28	2868	20 30 28	2894	18 58 1	2922	17 26 9	2953
	Mars	E.	60 18 48	2890	58 46 17	2905	57 14 5	2920	55 42 11	2934
	Spica η	E.	75 52 41	2800	74 18 13	2814	72 44 4	2828	71 10 12	2842
7	SUN	W.	61 29 18	3266	62 54 9	3279	64 18 45	3290	65 43 8	3302
	Pollux	W.	27 25 47	2909	28 57 55	2919	30 29 50	2929	32 1 32	2940
	Mars	E.	48 7 3	3000	46 36 50	3012	45 6 52	3025	43 37 10	3036
	Spica η	E.	63 25 8	2905	61 52 55	2916	60 20 56	2927	58 49 12	2937
	Antares	E.	109 18 21	2902	107 46 4	2913	106 14 1	2924	104 42 13	2935
8	SUN	W.	72 41 48	3354	74 4 57	3364	75 27 55	3372	76 50 44	3380
	Pollux	W.	39 36 50	2987	41 7 19	2995	42 37 38	3003	44 7 47	3011
	Mars	E.	36 12 4	3089	34 43 41	3098	33 15 29	3107	31 47 28	3115
	Spica η	E.	51 13 52	2988	49 43 24	2997	48 13 8	3005	46 43 1	3013
	Antares	E.	97 6 29	2984	95 35 56	2992	94 5 33	3000	92 35 21	3008
9	SUN	W.	83 42 36	3415	85 4 36	3420	86 26 30	3424	87 48 19	3429
	Pollux	W.	51 36 23	3041	53 5 45	3047	54 35 0	3051	56 4 10	3055
	Mars	E.	24 29 47	3152	23 2 40	3158	21 35 41	3164	20 8 49	3170
	Spica η	E.	39 14 47	3046	37 45 31	3052	36 16 23	3057	34 47 21	3061
	Antares	E.	85 6 30	3039	83 37 6	3044	82 7 48	3049	80 38 36	3053
10	SUN	W.	94 36 20	3443	95 57 48	3444	97 19 15	3446	98 40 40	3446
	Pollux	W.	63 29 1	3067	64 57 51	3068	66 26 40	3069	67 55 28	3069
	Regulus	W.	27 2 8	3108	28 30 8	3105	29 58 12	3102	31 26 19	3099
	Spica η	E.	27 23 26	3079	25 54 51	3082	24 26 20	3085	22 57 52	3087
	Antares	E.	73 13 36	3065	71 44 44	3066	70	3067	68 47 3	3068
	α Aquilæ	E.	118 35 31	4208	117 27 12	4179			115 9 13	4125
11	SUN	W.	105 27 54	3439	106 49 26	3437			9 32 40	3430
	Pollux	W.	75 19 39	3062	76 48 35	3051			1 46 38	3052
	Regulus	W.	38 47 49	3083	40 16 19	3071			35	3069
	Antares	E.	61 22 46	3061	59 53 48	305			43	3052
	α Aquilæ	E.	109 17 17	4014	108 5 51	390			5	3960
12	SUN	W.	116 22 3	3406	117 44 13	3				3386
	Pollux	W.	87 13 12	3028	88 42 50	3				3009
	Regulus	W.	50 38 32	3041	52 7 54	3				220
	Antares	E.	49 29 5	3027	47 59 26	3022				3009
	α Aquilæ	E.	99 37 53	3886	98 24 19	3777				150
13	SUN	W.	127 23 3	3346	128 46 21	333				120
	Regulus	W.	62 37 37	2979	64 8 16	297				50

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			P.L. of diff.	III ^h .			P.L. of diff.	VI ^h .			P.L. of diff.	IX ^h .			P.L. of diff.
		o	i	h		o	i	h		o	i	h		o	i	h	
13	Mars W.	16	8	2	3129	17	35	37	3119	19	3	24	3109	20	31	22	3100
	Antares E.	43	29	44	3001	41	59	33	2993	40	29	12	2985	38	58	41	2978
	α Aquilæ E.	94	42	22	3839	93	28	0	3828	92	13	27	3819	90	58	44	3810
	Fomalhaut E.	124	26	43	3290	123	2	20	3274	121	37	38	3257	120	12	36	3240
14	SUN W.	132	57	15	3310	134	21	15	3300	135	45	26	3291	137	9	48	3281
	Regulus W.	68	41	25	2941	70	12	52	2931	71	44	32	2920	73	16	26	2909
	Mars W.	27	54	5	3051	29	23	14	3042	30	52	35	3031	32	22	10	3020
	Spica ♀ W.	14	40	53	2972	16	11	41	2955	17	42	50	2939	19	14	19	2925
	Antares E.	31	23	27	2933	29	51	50	2923	28	20	0	2913	26	47	57	2902
	α Aquilæ E.	84	43	2	3774	83	27	33	3769	82	11	58	3766	80	56	20	3762
Fomalhaut E.	113	2	40	3162	111	35	45	3148	110	8	33	3133	108	41	3	3119	
15	Regulus W.	80	59	25	2853	82	32	44	2841	84	6	18	2829	85	40	8	2818
	Mars W.	39	53	30	2964	41	24	28	2951	42	55	42	2940	44	27	10	2928
	Spica ♀ W.	26	56	12	2858	28	29	25	2844	30	2	56	2832	31	36	43	2819
	α Aquilæ E.	74	37	37	3761	73	21	54	3765	72	6	15	3769	70	50	41	3773
	Fomalhaut E.	101	19	14	3048	99	50	1	3035	98	20	31	3022	96	50	45	3008
	α Pegasi E.	121	28	6	3300	120	3	54	3275	118	39	13	3250	117	14	3	3226
16	Regulus W.	93	33	12	2756	95	8	37	2744	96	44	18	2732	98	20	15	2720
	Mars W.	52	8	24	2866	53	41	26	2855	55	14	43	2842	56	48	17	2830
	Spica ♀ W.	39	29	48	2754	41	5	16	2742	42	41	0	2729	44	17	1	2716
	α Aquilæ E.	64	35	7	3835	63	20	41	3854	62	6	35	3876	60	52	51	3901
	Fomalhaut E.	89	17	53	2946	87	46	32	2934	86	14	56	2922	84	43	5	2911
	α Pegasi E.	110	1	26	3119	108	33	39	3100	107	5	29	3081	105	36	56	3063
	Jupiter E.	124	51	18	2791	123	16	38	2778	121	41	41	2765	120	6	27	2753
17	Regulus W.	106	24	4	2660	108	1	38	2648	109	39	28	2636	111	17	34	2625
	Mars W.	64	40	5	2768	66	15	15	2756	67	50	40	2744	69	26	22	2732
	Spica ♀ W.	52	21	17	2654	53	58	58	2642	55	36	56	2630	57	15	10	2618
	α Aquilæ E.	54	51	34	4080	53	41	13	4130	52	31	40	4187	51	23	2	4150
	Fomalhaut E.	77	0	27	2861	75	27	18	2852	73	53	57	2843	72	20	25	2836
	α Pegasi E.	98	8	56	2983	96	38	22	2968	95	7	29	2955	93	36	20	2942
	Jupiter E.	112	6	13	2690	110	29	20	2679	108	52	12	2666	107	14	47	2654
18	Mars W.	77	28	40	2675	79	5	54	2665	80	43	21	2653	82	21	4	2643
	Spica ♀ W.	65	30	20	2561	67	10	9	2550	68	50	13	2539	70	30	32	2528
	Antares W.	19	35	57	2562	21	15	44	2551	22	55	47	2539	24	36	6	2528
	Fomalhaut E.	64	30	34	2808	62	56	16	2804	61	21	53	2801	59	47	27	2800
	α Pegasi E.	85	56	41	2886	84	24	4	2877	82	51	16	2869	81	18	17	2861
	Jupiter E.	99	3	42	2596	97	24	42	2585	95	45	27	2574	94	5	57	2564
19	Mars W.	90	33	5	2593	92	12	9	2584	93	51	26	2575	95	30	55	2566
	Spica ♀ W.	78	55	44	2478	80	37	28	2470	82	19	24	2460	84	1	34	2451
	Antares W.	33	1	21	2477	34	43	6	2468	36	25	4	2459	38	7	15	2450
	Fomalhaut E.	51	55	24	2814	50	21	14	2822	48	47	15	2832	47	13	28	2844
	α Pegasi E.	73	31	16	2836	71	57	35	2833	70	23	50	2832	68	50	4	2832
	Jupiter E.	85	44	50	2513	84	3	55	2503	82	22	46	2494	80	41	25	2486
	α Arietis E.	115	11	54	2537	113	31	32	2526	111	50	55	2515	110	10	3	2506
20	Mars W.	103	51	16	2526	105	31	53	2519	107	12	40	2512	108	53	36	2505
	Spica ♀ W.	92	35	21	2411	94	18	40	2403	96	2	10	2396	97	45	50	2390
	Antares W.	46	41	13	2409	48	24	35	2402	50	8	7	2394	51	51	50	2388

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			III ^b .			VI ^b .			IX ^b .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.
20	Fomalhaut E.	39	29	57	2958	37	58	52	2995	36	28	33	3038	34	59	8	3090
	α Pegasi E.	61	1	43	2852	59	28	22	2860	57	55	12	2870	56	22	15	2883
	Jupiter E.	72	11	38	2444	70	29	6	2437	68	46	24	2430	67	3	32	2422
	α Arietis E.	101	42	24	2461	100	0	16	2453	98	17	56	2445	96	35	26	2438
21	Spica η W.	106	26	28	2360	108	11	1	2355	109	55	41	2349	111	40	29	2344
	Antares W.	60	32	42	2357	62	17	18	2352	64	2	2	2346	65	46	54	2342
	α Pegasi E.	48	42	40	2988	47	12	12	3019	45	42	23	3055	44	13	18	3096
	Jupiter E.	58	26	47	2391	56	43	0	2387	54	59	6	2381	53	15	4	2375
	α Arietis E.	88	0	30	2407	86	17	6	2402	84	33	34	2397	82	49	55	2393
	SUN E.	141	25	29	2701	139	48	50	2693	138	12	0	2685	136	35	0	2678
22	Antares W.	74	32	49	2321	76	18	18	2317	78	3	52	2314	79	49	31	2311
	α Pegasi E.	37	2	59	3414	35	40	58	3508	34	20	43	3519	33	2	29	3747
	Jupiter E.	44	33	12	2354	42	48	31	2351	41	3	46	2347	39	18	55	2344
	α Arietis E.	74	10	15	2375	72	26	5	2373	70	41	51	2371	68	57	35	2369
	SUN E.	128	27	51	2649	126	50	3	2645	125	12	9	2640	123	34	9	2636
23	Antares W.	88	38	46	2298	90	24	48	2297	92	10	52	2295	93	56	59	2293
	α Aquilæ W.	48	18	20	4080	49	28	41	3984	50	40	36	3897	51	53	59	3819
	Jupiter E.	30	33	39	2331	28	48	24	2329	27	3	7	2327	25	17	47	2326
	α Arietis E.	60	15	45	2366	58	31	22	2367	56	47	0	2368	55	2	39	2369
	SUN E.	115	22	53	2621	113	44	26	2618	112	5	55	2615	110	27	20	2614
24	Antares W.	102	48	5	2287	104	34	23	2287	106	20	42	2287	108	7	1	2285
	α Aquilæ W.	58	19	8	3517	59	39	13	3473	61	0	7	3432	62	21	47	3394
	Fomalhaut W.	26	10	19	3509	27	30	33	3370	28	53	24	3254	30	18	30	3155
	α Arietis E.	46	21	47	2387	44	37	53	2393	42	54	8	2399	41	10	32	2407
	SUN E.	102	13	54	2606	100	35	7	2605	98	56	19	2604	97	17	30	2604
25	α Aquilæ W.	69	19	37	3254	70	44	42	3233	72	10	12	3215	73	36	3	3199
	Fomalhaut W.	37	48	37	2840	39	22	13	2800	40	56	41	2765	42	31	55	2734
	SUN E.	89	3	21	2604	87	24	31	2605	85	45	43	2605	84	6	55	2606
26	α Aquilæ W.	80	49	25	3146	82	16	39	3139	83	44	1	3136	85	11	27	3133
	Fomalhaut W.	50	36	45	2629	52	15	1	2614	53	53	37	2602	55	32	29	2591
	α Pegasi W.	33	25	59	3561	34	45	16	3452	36	6	34	3359	37	29	37	3278
	SUN E.	75	53	18	2613	74	14	41	2615	72	36	7	2617	70	57	35	2620
	α Aquilæ W.	92	28	50	3142	93	56	9	3149	95	23	19	3156	96	50	21	3166
27	Fomalhaut W.	63	49	58	2556	65	29	54	2552	67	9	55	2548	68	50	1	2546
	α Pegasi W.	44	45	10	3001	46	15	21	2964	47	46	19	2932	49	17	57	2903
	Jupiter W.	25	40	37	2338	27	25	41	2341	29	10	40	2344	30	55	35	2348
	SUN E.	62	45	51	2635	61	7	43	2638	59	29	40	2643	57	51	43	2646
	α Aquilæ W.	104	2	0	3238	105	27	24	3258	106	52	25	3279	108	17	1	3303
	Fomalhaut W.	77	10	56	2546	78	51	6	2548	80	31	13	2551	82	11	16	2553
28	α Pegasi W.	57	4	1	2804	58	38	23	2792	60	13	2	2780	61	47	56	2771
	Jupiter W.	39	38	56	2366	41	23	20	2370	43	7	38	2375	44	51	49	2380
	SUN E.	49	43	29	2672	48	6	12	2678	46	29	3	2686	44	52	4	2692
	α Pegasi W.	69	44	47	2747	71	20	25	2744	72	56	6	2745	74	31	46	2746
	Jupiter W.	53	30	55	2407	55	14	20	2413	56	57	36	2419	58	40	44	2426
29	α Arietis W.	26	10	44	2633	27	48	54	2612	29	27	33	2595	31	6	35	2582
	SUN E.	36	49	40	2735	35	13	47	2746	33	38	8	2757	32	2	44	2770

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
20	Fomalhaut E.	33	30	46	3152	32	3	39	3224	30	37	58	3311	29	13	59	3414
	α Pegasi E.	54	49	35	2898	53	17	14	2916	51	45	16	2936	50	13	43	2960
	Jupiter E.	65	20	29	2416	63	37	17	2410	61	53	56	2403	60	10	26	2397
	α Arietis E.	94	52	45	2431	93	9	55	2424	91	26	55	2419	89	43	47	2412
21	Spica ♀ W.	113	25	24	2340	115	10	25	2336	116	55	32	2331	118	40	46	2328
	Antares W.	67	31	52	2337	69	16	57	2333	71	2	9	2329	72	47	26	2325
	α Pegasi E.	42	45	4	3143	41	17	47	3197	39	51	34	3259	38	26	35	3331
	Jupiter E.	51	30	54	2371	49	46	38	2366	48	2	15	2362	46	17	46	2359
	α Arietis E.	81	6	10	2389	79	22	19	2385	77	38	22	2382	75	54	21	2378
	SUN E.	134	57	51	2672	133	20	33	2665	131	43	6	2660	130	5	32	2654
22	Antares W.	81	35	14	2309	83	21	1	2305	85	6	53	2303	86	52	48	2301
	α Pegasi E.	31	46	32	3898	30	33	10	4074	29	22	43	4283	28	15	35	4532
	Jupiter E.	37	34	0	2341	35	49	1	2338	34	3	57	2336	32	18	50	2333
	α Arietis E.	67	13	16	2368	65	28	55	2366	63	44	32	2366	62	0	9	2366
	SUN E.	121	56	3	2632	120	17	52	2629	118	39	37	2626	117	1	17	2623
23	Antares W.	95	43	8	2292	97	29	20	2291	99	15	33	2289	101	1	49	2289
	α Aquilæ W.	53	8	42	3747	54	24	40	3681	55	41	47	3622	56	59	58	3567
	Jupiter E.	23	32	25	2324	21	47	0	2322	20	1	33	2322	18	16	5	2320
	α Arietis E.	53	18	20	2372	51	34	5	2375	49	49	54	2378	48	5	47	2382
	SUN E.	108	48	44	2611	107	10	4	2610	105	31	23	2608	103	52	39	2607
24	Antares W.	109	53	22	2286	111	39	42	2285	113	26	3	2286	115	12	23	2286
	α Aquilæ W.	63	44	10	3361	65	7	11	3330	66	30	48	3301	67	54	58	3276
	Fomalhaut W.	31	45	33	3071	33	14	18	3001	34	44	30	2939	36	16	0	2886
	α Arietis E.	39	27	7	2417	37	43	56	2427	36	1	0	2440	34	18	22	2455
	SUN E.	95	38	41	2604	93	59	51	2604	92	21	1	2604	90	42	11	2604
25	α Aquilæ W.	75	2	14	3185	76	28	41	3172	77	55	24	3162	79	22	19	3153
	Fomalhaut W.	44	7	50	2707	45	44	20	2684	47	21	21	2663	48	58	51	2645
	SUN E.	82	28	8	2607	80	49	23	2609	79	10	40	2610	77	31	58	2611
26	α Aquilæ W.	86	38	57	3132	88	6	28	3133	89	33	58	3134	91	1	26	3138
	Fomalhaut W.	57	11	36	2582	58	50	56	2574	60	30	27	2566	62	10	8	2560
	α Pegasi W.	38	54	14	3207	40	20	15	3145	41	47	30	3091	43	15	50	3043
	SUN E.	69	19	7	2622	67	40	42	2625	66	2	21	2628	64	24	4	2631
27	α Aquilæ W.	98	17	11	3177	99	43	48	3190	101	10	9	3204	102	36	14	3220
	Fomalhaut W.	70	30	10	2545	72	10	21	2544	73	50	33	2544	75	15	15	2545
	α Pegasi W.	50	50	12	2877	52	23	0	2855	53	56	16	2871	55	10	10	2818
	Jupiter W.	32	40	25	2351	34	25	11	2354	36	9	52	2354	38	1	10	2362
	SUN E.	56	13	51	2651	54	36	5	2656	52	58	26	2656	50	10	10	2666
28	α Aquilæ W.	109	41	9	3329	111	4	47	3358	112	27	52	3358	114	1	10	3362
	Fomalhaut W.	83	51	15	2557	85	31	9	2562	87	10	56	2562	89	10	10	2572
	α Pegasi W.	63	23	2	2763	64	58	18	2757	66	33	4	2757	68	10	10	2767
	Jupiter W.	46	35	53	2385	48	19	50	2390	50	3	10	2390	52	10	10	2400
	SUN E.	43	15	13	2700	41	38	33	2708	40	2	10	2708	38	10	10	2718
29	α Pegasi W.	76	7	25	2747	77	43	3	2750	79	18	10	2750	81	10	10	2760
	Jupiter W.	60	23	42	2433	62	6	30	2440	63	49	10	2440	65	10	10	2450
	α Arietis W.	32	45	55	2573	34	25	27	2566	36	5	10	2566	38	10	10	2576
	SUN E.	30	27	37	2783	28	52	47	2798	27	1	10	2798	25	10	10	2808

CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 15^h 45^m, MEAN TIME.

Day of the Month.	West.	East.
1	·4 3·	○ ·1
2	·3 ·4 1·	○ 2·
3	·3 2·	○ ·4 1·
4	·2 ·1	○ ·3 ·4
5		○ 1· 2· 3· 4·
6	·1 ●	○ 2· 3· 4·
7	1· ○ 3· ○	○ 2· 4·
8	·2 ●	○ ·1 4·
9	·3 1·	○ 2· 4·
10	·3 2·	○ 1· 4·
11	·2 ·1	○ 4· 3·
12	4·	○ 1· 3·
13	4·	○ ·1 2· 3·
14	4·	○ 3·
15	4·	○ ·1 3· 2· ○ ·1
16	·4 ·3 1·	○ 2·
17	·4 ·3	○ ·1
18	·4 ·2 ·1	○ ·3
19	·4	○ 2· 1· 3·
20	·1	○ 4· 2· 3·
21	2·	○ 1· 3· 4·
22	·1 ●	○ 3· 2· 4·
23	·3 1·	○ 2· 4·
24	·3 1·	○ 2· ·1 4·
25	·2 1·	○ 3· 4·
26	·2 ●	○ 1· 3· 4·
27	·1	○ 2· 4· 3·
28	2·	○ 4· 1· 3·
29	·1 ●	○ 4· 3·
30	1· ○	○ 2·

This Table represents, at 15^h 45^m after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite at its greatest elongation, the point is placed above or below the centre of the numeral. A circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^s . 17627 1. Days.	From Mean Noon of January 1.	
	At Mean Midnight,						Day of the Year.	Fraction of the Year.
	Logarithm of							
	A	B	C	D				
1	-0.7720	-1.2873	+9.4415	-0.9070	h m s 19 16 13.37	71	152	.416
2	0.7495	1.2896	9.4473	0.9066	19 12 17.46	72	153	.419
3	0.7257	1.2918	9.4530	0.9062	19 8 21.55	73	154	.422
4	-0.7005	-1.2939	+9.4587	-0.9058	19 4 25.63	74	155	.424
5	0.6735	1.2959	9.4643	0.9055	19 0 29.72	75	156	.427
6	0.6446	1.2977	9.4699	0.9052	18 56 33.81	76	157	.430
7	-0.6136	-1.2994	+9.4754	-0.9049	18 52 37.89	77	158	.433
8	0.5800	1.3009	9.4809	0.9047	18 48 41.98	78	159	.435
9	0.5435	1.3024	9.4863	0.9045	18 44 46.07	79	160	.438
10	-0.5035	-1.3037	+9.4916	-0.9043	18 40 50.16	80	161	.441
11	0.4594	1.3049	9.4969	0.9041	18 36 54.24	81	162	.444
12	0.4101	1.3059	9.5022	0.9040	18 32 58.33	82	163	.446
13	-0.3544	-1.3069	+9.5074	-0.9039	18 29 2.42	83	164	.449
14	0.2904	1.3077	9.5125	0.9039	18 25 6.51	84	165	.452
15	0.2151	1.3084	9.5176	0.9039	18 21 10.59	85	166	.454
16	-0.1239	-1.3090	+9.5227	-0.9039	18 17 14.68	86	167	.457
17	0.0081	1.3094	9.5277	0.9039	18 13 18.77	87	168	.460
18	9.8497	1.3098	9.5326	0.9040	18 9 22.86	88	169	.463
19	-9.5975	-1.3100	+9.5375	-0.9041	18 5 26.94	89	170	.465
20	-8.9248	1.3101	9.5423	0.9042	18 1 31.03	90	171	.468
21	+9.3571	1.3100	9.5471	0.9044	17 57 35.12	91	172	.471
22	+9.7318	-1.3099	+9.5519	-0.9046	17 53 39.20	92	173	.474
23	9.9298	1.3096	9.5565	0.9048	17 49 43.29	93	174	.476
24	0.0652	1.3092	9.5612	0.9051	17 45 47.38	94	175	.479
25	+0.1682	-1.3087	+9.5657	-0.9054	17 41 51			.482
26	0.2513	1.3081	9.5702	0.9057	17 37			.485
27	0.3209	1.3073	9.5747	0.9061	17			
28	+0.3808	-1.3065	+9.5791	-0.9064				
29	0.4333	1.3055	9.5835	0.9069				
30	0.4800	1.3043	9.5878	0.9073				
31	+0.5221	-1.3031	+9.5921	-0.9078				

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to Apparent Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.		
Tues.	1	h m s 6 42 26.58	s 10.335	o ' " N.23 6 5.8	" 10.99	m s 1 8.76	m s 3 32.56
Wed.	2	6 46 34.63	10.323	23 1 42.1	12.00	1 8.72	3 44.01
Thur.	3	6 50 42.40	10.310	22 56 54.2	13.00	1 8.68	3 55.18
Frid.	4	6 54 49.85	10.296	22 51 42.3	13.99	1 8.63	4 6.05
Sat.	5	6 58 56.98	10.282	22 46 6.4	14.98	1 8.59	4 16.59
Sun.	6	7 3 3.75	10.266	22 40 6.8	15.97	1 8.54	4 26.77
Mon.	7	7 7 10.15	10.250	22 33 43.6	16.95	1 8.49	4 36.59
Tues.	8	7 11 16.15	10.232	22 26 56.9	17.92	1 8.43	4 46.01
Wed.	9	7 15 21.74	10.214	22 19 47.0	18.88	1 8.38	4 55.01
Thur.	10	7 19 26.88	10.195	22 12 14.0	19.83	1 8.32	5 3.57
Frid.	11	7 23 31.56	10.176	22 4 18.2	20.78	1 8.25	5 11.67
Sat.	12	7 27 35.78	10.156	21 55 59.6	21.71	1 8.19	5 19.31
Sun.	13	7 31 39.52	10.135	21 47 18.6	22.64	1 8.13	5 26.48
Mon.	14	7 35 42.77	10.114	21 38 15.2	23.56	1 8.06	5 33.15
Tues.	15	7 39 45.52	10.093	21 28 49.8	24.47	1 7.99	5 39.32
Wed.	16	7 43 47.75	10.071	21 19 2.5	25.37	1 7.92	5 44.98
Thur.	17	7 47 49.46	10.049	21 8 53.5	26.27	1 7.84	5 50.12
Frid.	18	7 51 50.64	10.027	20 58 23.1	27.16	1 7.77	5 54.74
Sat.	19	7 55 51.29	10.005	20 47 31.4	28.03	1 7.69	5 58.81
Sun.	20	7 59 51.40	9.982	20 36 18.7	28.90	1 7.61	6 2.35
Mon.	21	8 3 50.96	9.959	20 24 45.3	29.75	1 7.53	6 5.34
Tues.	22	8 7 49.98	9.936	20 12 51.2	30.59	1 7.45	6 7.80
Wed.	23	8 11 48.44	9.912	20 0 36.8	31.43	1 7.37	6 9.70
Thur.	24	8 15 46.33	9.889	19 48 2.4	32.26	1 7.29	6 11.02
Frid.	25	8 19 43.66	9.865	19 35 8.0	33.08	1 7.20	6 11.79
Sat.	26	8 23 40.41	9.841	19 21 54.1	33.89	1 7.12	6 11.99
Sun.	27	8 27 36.58	9.817	19 8 20.9	34.68	1 7.03	6 11.61
Mon.	28	8 31 32.18	9.792	18 54 28.6	35.46	1 6.95	6 10.64
Tues.	29	8 35 27.19	9.767	18 40 17.5	36.23	1 6.86	6 9.09
Wed.	30	8 39 21.60	9.742	18 25 47.9	36.99	1 6.77	6 6.96
Thur.	31	8 43 15.41	9.717	18 11 0.1	37.74	1 6.69	6 4.22
Frid.	32	8 47 8.62		N.17 55 54.4		1 6.60	6 0.88

Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
Tues.	1	h m s 6 42 25.97	N. 23 6 6.5	15 46.0	m s 3 32.52	h m s 6 38 53.45
Wed.	2	6 46 33.99	23 1 42.8	15 45.9	3 43.98	6 42 50.01
Thur.	3	6 50 41.72	22 56 55.1	15 45.9	3 55.15	6 46 46.57
Frid.	4	6 54 49.15	22 51 43.2	15 45.9	4 6.02	6 50 43.13
Sat.	5	6 58 56.25	22 46 7.5	15 46.0	4 16.56	6 54 39.69
Sun.	6	7 3 2.99	22 40 8.0	15 46.0	4 26.74	6 58 36.25
Mon.	7	7 7 9.36	22 33 44.9	15 46.0	4 36.56	7 2 32.80
Tues.	8	7 11 15.34	22 26 58.4	15 46.1	4 45.98	7 6 29.36
Wed.	9	7 15 20.90	22 19 48.6	15 46.1	4 54.98	7 10 25.92
Thur.	10	7 19 26.02	22 12 15.7	15 46.1	5 3.54	7 14 22.48
Frid.	11	7 23 30.68	22 4 20.0	15 46.2	5 11.64	7 18 19.04
Sat.	12	7 27 34.88	21 56 1.5	15 46.2	5 19.28	7 22 15.60
Sun.	13	7 31 38.61	21 47 20.6	15 46.3	5 26.46	7 26 12.15
Mon.	14	7 35 41.84	21 38 17.4	15 46.3	5 33.13	7 30 8.71
Tues.	15	7 39 44.57	21 28 52.1	15 46.4	5 39.30	7 34 5.27
Wed.	16	7 43 46.79	21 19 4.9	15 46.4	5 44.96	7 38 1.83
Thur.	17	7 47 48.49	21 8 56.0	15 46.5	5 50.10	7 41 58.39
Frid.	18	7 51 49.66	20 58 25.7	15 46.5	5 54.72	7 45 54.94
Sat.	19	7 55 50.30	20 47 34.2	15 46.6	5 58.80	7 49 51.50
Sun.	20	7 59 50.40	20 36 21.6	15 46.7	6 2.34	7 53 48.06
Mon.	21	8 3 49.95	20 24 48.3	15 46.8	6 5.33	7 57 44.62
Tues.	22	8 7 48.96	20 12 54.3	15 46.8	6 7.79	8 1 41.17
Wed.	23	8 11 47.42	20 0 40.0	15 46.0	6 10.69	8 5 37.73
Thur.	24	8 15 45.31	19 48 5.7	15 47.0	6 13.68	8 9 34.29
Frid.	25	8 19 42.64	19 35 11.5	15 47.0	6 16.67	8 13 30.95
Sat.	26	8 23 39.39	19 21 57.6	15 47.0	6 19.66	8 17 23.81
Sun.	27	8 27 35.57	19 8 24.5	15 47.0	6 22.65	8 21 16.67
Mon.	28	8 31 31.17	18 54 32.2	15 47.0	6 25.64	8 25 9.53
Tues.	29	8 35 26.18	18 40 21.2	15 47.0	6 28.63	8 29 2.39
Wed.	30	8 39 20.60	18 25 51.7	15 47.0	6 31.62	8 33 5.25
Thur.	31	8 43 14.42	18 11 3.9	15 47.0	6 34.61	8 37 3.11
Frid.	32	8 47 7.65	N. 17 55 58.2	15 47.0	6 37.60	8 41 0.97

* The Semidiameter for Apparent Noon may be a

Mean

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Para	
	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Midnight.</i>	<i>Noon.</i>	<i>Mi</i>
1	99 44 55.9	N. 0.35	0.0072472	15 42.2	15 37.6	57 37.5	57
2	100 42 8.8	0.40	0.0072484	15 32.9	15 28.1	57 3.6	56
3	101 39 21.8	0.42	0.0072469	15 23.2	15 18.3	56 27.8	56
4	102 36 34.8	0.41	0.0072426	15 13.5	15 8.9	55 52.3	55
5	103 33 47.7	0.37	0.0072357	15 4.5	15 0.5	55 19.3	55
6	104 31 0.6	0.30	0.0072263	14 56.9	14 53.8	54 51.4	54
7	105 28 13.4	0.21	0.0072145	14 51.2	14 49.2	54 30.4	54
8	106 25 26.2	N. 0.11	0.0072003	14 47.8	14 47.1	54 18.0	54
9	107 22 38.9	S. 0.01	0.0071839	14 47.0	14 47.7	54 15.2	54
10	108 19 51.5	0.15	0.0071653	14 49.1	14 51.1	54 22.6	54
11	109 17 4.0	0.28	0.0071446	14 53.8	14 57.2	54 40.1	54
12	110 14 16.6	0.40	0.0071221	15 1.2	15 5.8	55 7.2	55
13	111 11 29.3	0.50	0.0070979	15 10.8	15 16.3	55 42.4	56
14	112 8 42.1	0.59	0.0070719	15 22.1	15 28.1	56 23.7	56
15	113 5 55.2	0.65	0.0070444	15 34.2	15 40.4	57 8.4	57
16	114 3 8.5	0.68	0.0070156	15 46.4	15 52.2	57 53.2	58
17	115 0 22.3	0.68	0.0069854	15 57.6	16 2.5	58 34.2	58
18	115 57 36.6	0.65	0.0069537	16 6.9	16 10.6	59 8.4	59
19	116 54 51.4	0.60	0.0069206	16 13.6	16 15.9	59 33.0	59
20	117 52 6.9	0.52	0.0068860	16 17.4	16 18.2	59 46.8	59
21	118 49 23.1	0.41	0.0068499	16 18.2	16 17.6	59 49.7	59
22	119 46 40.2	0.28	0.0068124	16 16.3	16 14.6	59 42.9	59
23	120 43 58.3	0.15	0.0067732	16 12.3	16 9.7	59 28.2	59
24	121 41 17.2	S. 0.02	0.0067322	16 6.7	16 3.6	59 7.7	58
25	122 38 37.1	N. 0.11	0.0066893	16 0.2	15 56.6	58 43.5	58
26	123 35 58.0	0.24	0.0066445	15 52.8	15 49.0	58 16.6	58
27	124 33 20.0	0.35	0.0065976	15 45.1	15 41.1	57 48.2	57
28	125 30 43.1	0.44	0.0065484	15 37.1	15 33.0	57 18.8	57
29	126 28 7.2	0.49	0.0064969	15 28.9	15 24.8	56 48.8	56
30	127 25 32.3	0.52	0.0064431	15 20.7	15 16.6	56 18.7	56
31	128 22 58.4	0.52	0.0063869	15 12.6	15 8.7	55 49.0	55
32	129 20 25.5	N. 0.49	0.0063284	15 4.9	15 1.3	55 20.8	55

MEAN TIME.

		THE MOON'S														
Day of the Week.	Day of the Month.	Longitude.				Latitude.				Age.	Meridian Passage.					
		Noon.		Midnight.		Noon.		Midnight.		Noon.						
		°	'	°	'	°	'	°	'	d						
Tues.	1	88	34	37.4	95	18	43.9	N. 4	38	9.8	N. 4	49	43.1	28.5	h	m
Wed.	2	101	59	7.8	108	35	31.8	4	57	10.6	5	0	32.9	0.1	0	11.8
Thur.	3	115	7	42.7	121	35	31.5	4	59	55.1	4	55	25.4	1.1	1	8.1
Frid.	4	127	58	54.1	134	17	52.2	4	47	14.6	4	35	36.4	2.1	2	0.3
Sat.	5	140	32	32.9	146	43	8.7	4	20	45.9	4	2	59.4	3.1	2	48.2
Sun.	6	152	49	57.2	158	53	21.0	3	42	33.9	3	19	47.0	4.1	3	32.1
Mon.	7	164	53	46.9	170	51	45.3	2	54	55.6	2	28	17.6	5.1	4	13.3
Tues.	8	176	47	50.3	182	42	38.3	2	0	9.5	1	30	48.2	6.1	4	52.7
Wed.	9	188	36	47.7	194	30	58.5	N. 1	0	30.9	N. 0	29	33.6	7.1	5	31.5
Thur.	10	200	25	51.8	206	22	8.7	S. 0	1	46.8	S. 0	33	13.5	8.1	6	11.1
Frid.	11	212	20	30.7	218	21	37.0	1	4	28.4	1	35	13.7	9.1	6	52.6
Sat.	12	224	26	6.8	230	34	35.6	2	5	10.4	2	33	58.4	10.1	7	37.1
Sun.	13	236	47	36.2	243	5	36.5	3	1	16.2	3	26	42.3	11.1	8	25.8
Mon.	14	249	28	59.7	255	58	2.5	3	49	53.5	4	10	26.4	12.1	9	19.0
Tues.	15	262	32	54.8	269	13	38.4	4	27	57.9	4	42	5.3	13.1	10	16.4
Wed.	16	276	0	6.8	282	52	5.3	4	52	27.2	4	58	44.8	14.1	11	16.3
Thur.	17	289	49	11.0	296	50	53.2	5	0	43.0	4	58	10.3	15.1	12	16.5
Frid.	18	303	56	34.9	311	5	33.5	4	51	1.0	4	39	15.5	16.1	13	14.7
Sat.	19	318	17	3.6	325	30	18.3	4	22	59.9	4	2	26.9	17.1	14	9.6
Sun.	20	332	44	31.0	339	58	58.1	3	37	56.1	3	9	52.0	18.1	15	1.3
Mon.	21	347	12	59.4	354	26	0.1	2	38	44.0	2	5	4.9	19.1	15	50.7
Tues.	22	1	37	31.1	8	47	9.6	1	29	31.2	S. 0	52	39.5	20.1	16	39.1
Wed.	23	15	54	38.3	22	59	45.2	S. 0	15	8.0	N. 0	22	26.2	21.1	17	27.7
Thur.	24	30	2	22.8	37	2	26.6	N. 0	59	27.0	1	35	20.6	22.1	18	18.0
Frid.	25	43	59	54.7	50	54	46.4	2	9	14.5	4	40	1.1	23.1	19	10.9
Sat.	26	57	47	1.8	64	36	39.9	3	11	11.5	3	45	4.4	24.1	20	5.6
Sun.	27	71	23	39.9	78	7	58.9	4	1	3.0	4	48	0.0	25.1	21	4
Mon.	28	84	49	33.0	91	28	17.5	4	36	45.0	4	56	0.0	26.1	22	
Tues.	29	98	4	5.6	104	36	50.6	4	57	5.0	3	15	8.0	27.1	23	
Wed.	30	111	6	25.7	117	32	44.5	5	1	29.0	3	51	1.1	28.1	24	
Thur.	31	123	55	41.5	130	15	13.0	4	50	0.0	4	37	0.0	29.1	25	
Frid.	32	136	31	17.9	142	43	58.4	N. 4	25	0.0	4	10	0.0	0.6	26	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>TUESDAY 1.</i>				<i>THURSDAY 3.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	5 53 34.16	N.28 5 18.3	14.21	0	7 52 21.15	N.26 2 23.0	
1	5 56 6.92	28 6 43.6	12.43	1	7 54 42.34	25 56 0.6	
2	5 58 39.62	28 7 58.2	10.66	2	7 57 3.15	25 49 30.0	
3	6 1 12.26	28 9 2.1	8.89	3	7 59 23.56	25 42 51.3	
4	6 3 44.83	28 9 55.4	7.12	4	8 1 43.58	25 36 4.6	
5	6 6 17.33	28 10 38.1	5.35	5	8 4 3.21	25 29 9.9	
6	6 8 49.73	28 11 10.2	3.59	6	8 6 22.43	25 22 7.4	
7	6 11 22.04	28 11 31.7	1.82	7	8 8 41.26	25 14 57.0	
8	6 13 54.24	28 11 42.7	0.07	8	8 10 59.67	25 7 39.0	
9	6 16 26.32	28 11 43.1	1.69	9	8 13 17.69	25 0 13.3	
10	6 18 58.28	28 11 33.0	3.43	10	8 15 35.29	24 52 40.1	
11	6 21 30.11	28 11 12.4	5.18	11	8 17 52.48	24 44 59.4	
12	6 24 1.79	28 10 41.3	6.92	12	8 20 9.26	24 37 11.4	
13	6 26 33.32	28 9 59.8	8.65	13	8 22 25.62	24 29 16.1	
14	6 29 4.70	28 9 7.9	10.38	14	8 24 41.57	24 21 13.6	
15	6 31 35.90	28 8 5.6	12.10	15	8 26 57.10	24 13 3.9	
16	6 34 6.93	28 6 53.0	13.82	16	8 29 12.21	24 4 47.2	
17	6 36 37.77	28 5 30.1	15.52	17	8 31 26.90	23 56 23.6	
18	6 39 8.42	28 3 56.9	17.22	18	8 33 41.18	23 47 53.2	
19	6 41 38.86	28 2 13.6	18.92	19	8 35 55.03	23 39 15.9	
20	6 44 9.09	28 0 20.1	20.61	20	8 38 8.47	23 30 31.9	
21	6 46 39.11	27 58 16.4	22.28	21	8 40 21.48	23 21 41.3	
22	6 49 8.90	27 56 2.7	23.96	22	8 42 34.08	23 12 44.2	
23	6 51 38.45	N.27 53 39.0	25.62	23	8 44 46.25	N.23 3 40.6	
<i>WEDNESDAY 2.</i>				<i>FRIDAY 4.</i>			
0	6 54 7.76	N.27 51 5.3	27.27	0	8 46 58.01	N.22 54 30.7	
1	6 56 36.82	27 48 21.7	28.92	1	8 49 9.34	22 45 14.5	
2	6 59 5.63	27 45 28.2	30.55	2	8 51 20.26	22 35 52.1	
3	7 1 34.17	27 42 24.9	32.18	3	8 53 30.75	22 26 23.6	
4	7 4 2.44	27 39 11.8	33.79	4	8 55 40.83	22 16 49.0	
5	7 6 30.43	27 35 49.1	35.40	5	8 57 50.49	22 7 8.5	
6	7 8 58.14	27 32 16.7	36.99	6	8 59 59.73	21 57 22.2	
7	7 11 25.55	27 28 34.7	38.58	7	9 2 8.56	21 47 30.0	
8	7 13 52.67	27 24 43.3	40.15	8	9 4 16.97	21 37 32.2	
9	7 16 19.48	27 20 42.4	41.71	9	9 6 24.96	21 27 28.7	
10	7 18 45.97	27 16 32.1	43.26	10	9 8 32.55	21 17 19.7	
11	7 21 12.15	27 12 12.5	44.81	11	9 10 39.73	21 7 5.2	
12	7 23 38.00	27 7 43.7	46.33	12	9 12 46.49	20 56 45.4	
13	7 26 3.53	27 3 5.7	47.85	13	9 14 52.85	20 46 20.3	
14	7 28 28.72	26 58 18.6	49.35	14	9 16 58.81	20 35 49.9	
15	7 30 53.57	26 53 22.5	50.85	15	9 19 4.36	20 25 14.4	
16	7 33 18.08	26 48 17.4	52.33	16	9 21 9.51	20 14 33.9	
17	7 35 42.24	26 43 3.4	53.80	17	9 23 14.27	20 3 48.4	
18	7 38 6.04	26 37 40.6	55.26	18	9 25 18.62	19 52 58.0	
19	7 40 29.49	26 32 9.1	56.70	19	9 27 22.59	19 42 2.7	
20	7 42 52.57	26 26 28.9	58.13	20	9 29 26.16	19 31 2.7	
21	7 45 15.28	26 20 40.1	59.55	21	9 31 29.35	19 19 58.1	
22	7 47 37.62	26 14 42.8	60.96	22	9 33 32.14	19 8 48.8	
23	7 49 59.58	26 8 37.1	62.35	23	9 35 34.56	18 57 35.0	
24	7 52 21.15	N.26 2 23.0		24	9 37 36.59	N.18 46 16.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>SATURDAY 5.</i>				<i>MONDAY 7.</i>		
<i>m</i> 37 36'59	<i>N. 18</i> 46 16'8	<i>"</i> 113'76	0	<i>h m s</i> 11 8 56'06	<i>N. 8</i> 38 30'8	136'12
39 38'25	18 34 54'2	114'48	1	11 10 44'00	8 24 54'1	136'36
41 39'53	18 23 27'3	115'18	2	11 12 31'75	8 11 15'9	136'60
43 40'44	18 11 56'2	115'88	3	11 14 19'34	7 57 36'3	136'82
45 40'98	18 0 21'0	116'56	4	11 16 6'75	7 43 55'4	137'04
47 41'15	17 48 41'6	117'23	5	11 17 53'99	7 30 13'2	137'25
49 40'96	17 36 58'3	117'88	6	11 19 41'07	7 16 29'7	137'45
51 40'42	17 25 11'0	118'53	7	11 21 27'99	7 2 45'0	137'64
53 39'52	17 13 19'8	119'16	8	11 23 14'76	6 48 59'1	137'83
55 38'27	17 1 24'8	119'78	9	11 25 1'38	6 35 12'2	138'01
57 36'66	16 49 26'1	120'40	10	11 26 47'86	6 21 24'1	138'18
59 34'72	16 37 23'8	120'99	11	11 28 34'20	6 7 35'1	138'34
1 32'43	16 25 17'8	121'58	12	11 30 20'41	5 53 45'0	138'50
3 29'80	16 13 8'3	122'16	13	11 32 6'49	5 39 54'0	138'65
5 26'84	16 0 55'3	122'73	14	11 33 52'44	5 26 2'1	138'79
7 23'55	15 48 39'0	123'28	15	11 35 38'27	5 12 9'5	138'93
9 19'93	15 36 19'3	123'83	16	11 37 23'99	4 58 15'7	139'06
11 15'98	15 23 56'3	124'36	17	11 39 9'59	4 44 21'4	139'18
13 11'72	15 11 30'1	124'88	18	11 40 55'09	4 30 26'3	139'30
15 7'14	14 59 0'8	125'40	19	11 42 40'49	4 16 30'5	139'41
17 2'25	14 46 28'4	125'90	20	11 44 25'79	4 2 34'1	139'51
18 57'06	14 33 53'0	126'39	21	11 46 11'00	3 48 37'0	139'60
20 51'56	14 21 14'7	126'87	22	11 47 56'12	3 34 39'4	139'69
22 45'76	<i>N. 14</i> 8 33'5	127'34	23	11 49 41'16	<i>N. 3</i> 20 41'2	139'77
<i>SUNDAY 6.</i>				<i>TUESDAY 8.</i>		
24 39'67	<i>N. 13</i> 55 49'4	127'80	0	11 51 26'12	<i>N. 3</i> 6 42'6	139'85
26 33'29	13 43 2'6	128'25	1	11 53 11'01	2 52 43'5	139'92
28 26'62	13 30 13'1	128'69	2	11 54 55'83	2 38 44'0	139'98
30 19'66	13 17 20'9	129'13	3	11 56 40'59	2 24 44'1	140'04
32 12'43	13 4 26'2	129'55	4	11 58 25'29	2 10 43'9	140'08
34 4'93	12 51 28'9	129'96	5	12 0 9'93	1 56 43'4	140'13
35 57'15	12 38 29'1	130'37	6	12 1 54'52	1 42 42'6	140'16
37 49'11	12 25 26'9	130'76	7	12 3 39'07	1 28 41'6	140'19
39 40'81	12 12 22'3	131'15	8	12 5 23'58	1 14 40'5	140'21
41 32'25	11 59 15'4	131'52	9	12 7 8'05	1 0 39'2	140'23
43 23'44	11 46 6'3	131'89	10	12 8 52'49	0 46 37'9	140'23
45 14'38	11 32 55'0	132'25	11	12 10 36'91	0 32 36'5	140'24
47 5'08	11 19 41'5	132'60	12	12 12 21'30	0 18 35'1	140'23
48 55'54	11 6 25'9	132'94	13	12 14 5'68	<i>N. 0</i> 4 33'7	140'22
50 45'76	10 53 8'3	133'27	14	12 15 50'04	<i>S. 0</i> 9 27'6	140'20
52 35'76	10 39 48'6	133'60	15	12 17 34'40	0 23 28'8	140'18
54 25'52	10 26 27'1	133'91	16	12 19 18'76	0 37 29'8	140'15
56 15'07	10 13 3'6	134'22	17	12 21 3'11	0 51 30'7	140'11
58 4'40	9 59 38'3	134'51	18	12 22 47'48	1 5 31'3	140'07
59 53'52	9 46 11'2	134'80	19	12 24 31'86	1 19 31'7	140'02
1 42'42	9 32 42'4	135'08	20	12 26 16'25	1 33 31'8	139'96
3 31'13	9 19 11'9	135'36	21	12 28 0'66	1 47 31'6	
5 19'63	9 5 39'8	135'62	22	12 29 45'10	2 1 31'	
7 7'94	8 52 6'1	135'88	23	12 31 29'58	2 15 30'	
8 56'06	<i>N. 8</i> 38 30'8		24	12 33 14'09	<i>S. 2</i> 29 21'	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>WEDNESDAY 9.</i>				<i>FRIDAY 11.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	12 33 14.09	S. 2 29 28.5	139.68	0	13 59 4.86	S. 13 18 20.1	
1	12 34 58.64	2 43 26.6	139.59	1	14 0 56.89	13 31 5.9	
2	12 36 43.23	2 57 24.1	139.50	2	14 2 49.18	13 43 49.0	
3	12 38 27.87	3 11 21.1	139.39	3	14 4 41.75	13 56 29.4	
4	12 40 12.57	3 25 17.4	139.29	4	14 6 34.59	14 9 7.1	
5	12 41 57.32	3 39 13.2	139.17	5	14 8 27.72	14 21 41.9	
6	12 43 42.14	3 53 8.2	139.05	6	14 10 21.14	14 34 13.9	
7	12 45 27.03	4 7 2.5	138.92	7	14 12 14.84	14 46 42.9	
8	12 47 11.99	4 20 56.1	138.80	8	14 14 8.85	14 59 9.0	
9	12 48 57.03	4 34 48.9	138.66	9	14 16 3.15	15 11 32.0	
10	12 50 42.15	4 48 40.8	138.51	10	14 17 57.76	15 23 52.0	
11	12 52 27.36	5 2 31.9	138.36	11	14 19 52.68	15 36 8.7	
12	12 54 12.67	5 16 22.0	138.20	12	14 21 47.92	15 48 22.3	
13	12 55 58.07	5 30 11.2	138.03	13	14 23 43.47	16 0 32.6	
14	12 57 43.57	5 43 59.3	137.86	14	14 25 39.34	16 12 39.5	
15	12 59 29.18	5 57 46.5	137.68	15	14 27 35.54	16 24 43.1	
16	13 1 14.90	6 11 32.5	137.49	16	14 29 32.06	16 36 43.2	
17	13 3 0.73	6 25 17.5	137.30	17	14 31 28.92	16 48 39.8	
18	13 4 46.69	6 39 1.3	137.10	18	14 33 26.12	17 0 32.8	
19	13 6 32.77	6 52 43.9	136.89	19	14 35 23.66	17 12 22.1	
20	13 8 18.98	7 6 25.2	136.68	20	14 37 21.55	17 24 7.8	
21	13 10 5.32	7 20 5.2	136.46	21	14 39 19.78	17 35 49.6	
22	13 11 51.81	7 33 44.0	136.23	22	14 41 18.37	17 47 27.7	
23	13 13 38.43	S. 7 47 21.3	135.99	23	14 43 17.31	S. 17 59 1.8	
<i>THURSDAY 10.</i>				<i>SATURDAY 12.</i>			
0	13 15 25.21	S. 8 0 57.3	135.75	0	14 45 16.62	S. 18 10 32.0	
1	13 17 12.14	8 14 31.8	135.50	1	14 47 16.29	18 21 58.1	
2	13 18 59.23	8 28 4.8	135.25	2	14 49 16.32	18 33 20.2	
3	13 20 46.48	8 41 36.3	134.98	3	14 51 16.73	18 44 38.1	
4	13 22 33.90	8 55 6.2	134.71	4	14 53 17.51	18 55 51.7	
5	13 24 21.49	9 8 34.5	134.43	5	14 55 18.67	19 7 1.0	
6	13 26 9.26	9 22 1.1	134.14	6	14 57 20.21	19 18 5.9	
7	13 27 57.22	9 35 25.9	133.85	7	14 59 22.14	19 29 5.4	
8	13 29 45.36	9 48 49.0	133.55	8	15 1 24.46	19 40 2.4	
9	13 31 33.69	10 2 10.3	133.24	9	15 3 27.16	19 50 53.7	
10	13 33 22.22	10 15 29.8	132.92	10	15 5 30.26	20 1 40.4	
11	13 35 10.95	10 28 47.3	132.60	11	15 7 33.76	20 12 22.4	
12	13 36 59.89	10 42 2.9	132.26	12	15 9 37.65	20 22 59.5	
13	13 38 49.04	10 55 16.5	131.92	13	15 11 41.95	20 33 31.7	
14	13 40 38.40	11 8 28.0	131.57	14	15 13 46.66	20 43 59.0	
15	13 42 27.98	11 21 37.5	131.22	15	15 15 51.78	20 54 21.2	
16	13 44 17.79	11 34 44.8	130.85	16	15 17 57.31	21 4 38.3	
17	13 46 7.83	11 47 49.9	130.48	17	15 20 3.25	21 14 50.2	
18	13 47 58.09	12 0 52.7	130.10	18	15 22 9.60	21 24 56.8	
19	13 49 48.60	12 13 53.3	129.71	19	15 24 16.38	21 34 58.1	
20	13 51 39.35	12 26 51.6	129.31	20	15 26 23.57	21 44 53.9	
21	13 53 30.35	12 39 47.4	128.90	21	15 28 31.19	21 54 44.3	
22	13 55 21.59	12 52 40.8	128.49	22	15 30 39.23	22 4 29.0	
23	13 57 13.10	13 5 31.7	128.06	23	15 32 47.69	22 14 8.1	
24	13 59 4.86	S. 13 18 20.1		24	15 34 56.58	S. 22 23 41.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
<i>SUNDAY 13.</i>				<i>TUESDAY 15.</i>			
0	h m s 15 34 56.58	S. 22 23 41.5	94.59	0	h m s 17 26 24.59	S. 27 42 33.5	31.68
1	15 37 5.90	22 33 9.1	93.61	1	17 28 53.47	27 45 43.6	30.05
2	15 39 15.65	22 42 30.7	92.61	2	17 31 22.67	27 48 43.8	28.40
3	15 41 25.84	22 51 46.4	91.60	3	17 33 52.17	27 51 34.2	26.75
4	15 43 36.45	23 0 56.0	90.57	4	17 36 21.98	27 54 14.7	25.08
5	15 45 47.51	23 9 59.4	89.53	5	17 38 52.08	27 56 45.2	23.41
6	15 47 58.99	23 18 56.6	88.48	6	17 41 22.47	27 59 5.7	21.72
7	15 50 10.92	23 27 47.5	87.41	7	17 43 53.13	28 1 16.0	20.03
8	15 52 23.28	23 36 32.0	86.33	8	17 46 24.07	28 3 16.2	18.32
9	15 54 36.08	23 45 10.0	85.24	9	17 48 55.27	28 5 6.1	16.61
10	15 56 49.31	23 53 41.4	84.13	10	17 51 26.73	28 6 45.8	14.89
11	15 59 2.98	24 2 6.2	83.01	11	17 53 58.43	28 8 15.1	13.16
12	16 1 17.09	24 10 24.3	81.87	12	17 56 30.37	28 9 34.1	11.42
13	16 3 31.64	24 18 35.5	80.72	13	17 59 2.55	28 10 42.6	9.67
14	16 5 46.63	24 26 39.8	79.55	14	18 1 34.94	28 11 40.7	7.92
15	16 8 2.06	24 34 37.2	78.37	15	18 4 7.56	28 12 28.2	6.15
16	16 10 17.92	24 42 27.4	77.18	16	18 6 40.38	28 13 5.1	4.39
17	16 12 34.22	24 50 10.4	75.97	17	18 9 13.39	28 13 31.4	2.61
18	16 14 50.96	24 57 46.2	74.75	18	18 11 46.60	28 13 47.0	0.83
19	16 17 8.13	25 5 14.7	73.51	19	18 14 19.98	28 13 52.0	0.96
20	16 19 25.74	25 12 35.8	72.26	20	18 16 53.53	28 13 46.2	2.76
21	16 21 43.78	25 19 49.3	70.99	21	18 19 27.25	28 13 29.7	4.56
22	16 24 2.25	25 26 55.3	69.71	22	18 22 1.12	28 13 2.4	6.36
23	16 26 21.15	S. 25 33 53.6	68.42	23	18 24 35.13	S. 28 12 24.2	8.17
<i>MONDAY 14.</i>				<i>WEDNESDAY 16.</i>			
0	16 28 40.47	S. 25 40 44.1	67.11	0	18 27 9.27	S. 28 11 35.2	9.99
1	16 31 0.22	25 47 26.8	65.79	1	18 29 43.54	28 10 35.3	11.80
2	16 33 20.40	25 54 1.5	64.45	2	18 32 17.92	28 9 24.5	13.63
3	16 35 41.00	26 0 28.2	63.10	3	18 34 52.41	28 8 2.7	15.45
4	16 38 2.01	26 6 46.9	61.74	4	18 37 27.00	28 6 30.0	17.28
5	16 40 23.44	26 12 57.3	60.36	5	18 40 1.66	28 4 46.3	19.11
6	16 42 45.29	26 18 59.5	58.97	6	18 42 36.41	28 2 51.7	20.94
7	16 45 7.54	26 24 53.3	57.57	7	18 45 11.22	28 0 46.0	22.78
8	16 47 30.20	26 30 38.7	56.15	8	18 47 46.09	27 58 29.4	24.61
9	16 49 53.26	26 36 15.6	54.71	9	18 50 21.01	27 56 1.7	26.45
10	16 52 16.72	26 41 43.8	53.27	10	18 52 55.97	27 53 23.0	28.28
11	16 54 40.58	26 47 3.4	51.81	11	18 55 30.95	27 50 33.3	30.12
12	16 57 4.83	26 52 14.3	50.34	12	18 58 5.95	27 47 32.6	31.96
13	16 59 29.47	26 57 16.3	48.85	13	19 1 20.96	27 44 20.8	33.80
14	17 1 54.49	27 2 9.5	47.35	14	19 4 45.98	27 40 58.1	35.63
15	17 4 19.88	27 6 53.6	45.84	15	19 8 10.98	27 37 24.3	37.47
16	17 6 45.65	27 11 28.6	44.32	16	19 10 35.99	27 33 39.5	39.30
17	17 9 11.79	27 15 54.5	42.78	17	19 13 50.99	27 29 43.7	41.12
18	17 11 38.29	27 20 11.2	41.23	18	19 16 15.99	27 25 36.9	42.95
19	17 14 5.15	27 24 18.6	39.67	19	19 18 40.99	27 21 19.2	44.77
20	17 16 32.36	27 28 16.6	38.09	20	19 21 55.99	27 16 50.5	46.59
21	17 18 59.91	27 32 5.2	36.51	21	19 24 10.99	27 12 10.8	48.41
22	17 21 27.81	27 35 44.2	34.91	22	19 26 25.99	27 7 20.3	50.23
23	17 23 56.04	27 39 13.7	33.30	23	19 28 40.99	27 2 18.9	52.05
24	17 26 24.59	S. 27 42 33.5		24	19 30 55.99	S. 26 57 6.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
<i>THURSDAY 17.</i>				<i>SATURDAY 19.</i>			
0	19 29 4.05	S. 26 57 6.6	53.85	0	21 28 37.66	S. 19 31 38.0	128.51
1	19 31 38.45	26 51 43.5	55.65	1	21 31 0.18	19 18 46.9	129.72
2	19 34 12.74	26 46 9.6	57.45	2	21 33 22.38	19 5 48.6	130.90
3	19 36 46.91	26 40 24.9	59.24	3	21 35 44.27	18 52 43.2	132.07
4	19 39 20.96	26 34 29.5	61.02	4	21 38 5.83	18 39 30.8	133.23
5	19 41 54.87	26 28 23.3	62.79	5	21 40 27.08	18 26 11.4	134.36
6	19 44 28.65	26 22 6.6	64.56	6	21 42 48.01	18 12 45.3	135.48
7	19 47 2.27	26 15 39.2	66.32	7	21 45 8.62	17 59 12.4	136.58
8	19 49 35.73	26 9 1.3	68.08	8	21 47 28.91	17 45 32.9	137.66
9	19 52 9.03	26 2 12.8	69.82	9	21 49 48.89	17 31 46.9	138.73
10	19 54 42.16	25 55 13.9	71.56	10	21 52 8.56	17 17 54.5	139.78
11	19 57 15.11	25 48 4.5	73.29	11	21 54 27.91	17 3 55.8	140.81
12	19 59 47.87	25 40 44.8	75.01	12	21 56 46.95	16 49 51.0	141.82
13	20 2 20.44	25 33 14.7	76.72	13	21 59 5.68	16 35 40.1	142.81
14	20 4 52.81	25 25 34.4	78.42	14	22 1 24.10	16 21 23.2	143.79
15	20 7 24.97	25 17 43.9	80.11	15	22 3 42.22	16 7 0.4	144.75
16	20 9 56.91	25 9 43.3	81.79	16	22 6 0.03	15 52 31.9	145.69
17	20 12 28.64	25 1 32.6	83.45	17	22 8 17.54	15 37 57.8	146.61
18	20 15 0.14	24 53 11.8	85.11	18	22 10 34.75	15 23 18.1	147.52
19	20 17 31.41	24 44 41.2	86.76	19	22 12 51.67	15 8 33.0	148.41
20	20 20 2.44	24 36 0.6	88.39	20	22 15 8.129	14 53 42.5	149.28
21	20 22 33.23	24 27 10.3	90.01	21	22 17 24.62	14 38 46.9	150.13
22	20 25 3.77	24 18 10.2	91.62	22	22 19 40.66	14 23 46.1	150.96
23	20 27 34.05	S. 24 9 0.5	93.22	23	22 21 56.41	S. 14 8 40.3	151.78
<i>FRIDAY 18.</i>				<i>SUNDAY 20.</i>			
0	20 30 4.07	S. 23 59 41.1	94.80	0	22 24 11.89	S. 13 53 29.6	152.58
1	20 32 33.83	23 50 12.3	96.38	1	22 26 27.08	13 38 14.1	153.36
2	20 35 3.33	23 40 34.0	97.94	2	22 28 42.00	13 22 54.0	154.12
3	20 37 32.55	23 30 46.4	99.48	3	22 30 56.64	13 7 29.3	154.87
4	20 40 1.49	23 20 49.5	101.01	4	22 33 11.01	12 52 0.1	155.59
5	20 42 30.16	23 10 43.4	102.53	5	22 35 25.12	12 36 26.5	156.30
6	20 44 58.54	23 0 28.2	104.04	6	22 37 38.96	12 20 48.7	156.99
7	20 47 26.63	22 50 4.0	105.53	7	22 39 52.55	12 5 6.7	157.67
8	20 49 54.44	22 39 30.8	107.00	8	22 42 5.87	11 49 20.7	158.32
9	20 52 21.94	22 28 48.8	108.46	9	22 44 18.95	11 33 30.8	158.96
10	20 54 49.15	22 17 58.0	109.91	10	22 46 31.78	11 17 37.0	159.58
11	20 57 16.07	22 6 58.6	111.34	11	22 48 44.36	11 1 39.5	160.19
12	20 59 42.67	21 55 50.5	112.76	12	22 50 56.71	10 45 38.4	160.77
13	21 2 8.97	21 44 33.9	114.16	13	22 53 8.82	10 29 33.8	161.34
14	21 4 34.97	21 33 9.0	115.55	14	22 55 20.70	10 13 25.7	161.89
15	21 7 0.65	21 21 35.7	116.92	15	22 57 32.36	9 57 14.4	162.42
16	21 9 26.03	21 9 54.2	118.27	16	22 59 43.79	9 40 59.8	162.94
17	21 11 51.09	20 58 4.6	119.61	17	23 1 55.00	9 24 42.2	163.44
18	21 14 15.83	20 46 6.9	120.93	18	23 4 6.00	9 8 21.6	163.92
19	21 16 40.26	20 34 1.4	122.23	19	23 6 16.79	8 51 58.1	164.38
20	21 19 4.38	20 21 48.0	123.52	20	23 8 27.37	8 35 31.8	164.83
21	21 21 28.18	20 9 26.8	124.80	21	23 10 37.75	8 19 2.8	165.26
22	21 23 51.66	19 56 58.0	126.05	22	23 12 47.94	8 2 31.2	165.67
23	21 26 14.82	19 44 21.7	127.29	23	23 14 57.94	7 45 57.2	166.07
24	21 28 37.66	S. 19 31 38.0		24	23 17 7.74	S. 7 29 20.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
MONDAY 21.				WEDNESDAY 23.			
	h m s	° ' "	"		h m s	° ' "	"
0	23 17 7.74	S. 7 29 20.8	166.44	0	0 59 0.49	N. 6 1 58.3	165.54
1	23 19 17.37	7 12 42.1	166.81	1	1 1 7.55	6 18 31.5	165.14
2	23 21 26.82	6 56 1.3	167.15	2	1 3 14.69	6 35 2.4	164.73
3	23 23 36.10	6 39 18.4	167.48	3	1 5 21.91	6 51 30.8	164.31
4	23 25 45.21	6 22 33.5	167.79	4	1 7 29.22	7 7 56.7	163.87
5	23 27 54.16	6 5 46.8	168.08	5	1 9 36.62	7 24 19.9	163.41
6	23 30 2.95	5 48 58.3	168.36	6	1 11 44.11	7 40 40.4	162.95
7	23 32 11.60	5 32 8.2	168.62	7	1 13 51.71	7 56 58.0	162.46
8	23 34 20.09	5 15 16.5	168.86	8	1 15 59.42	8 13 12.8	161.96
9	23 36 28.44	4 58 23.4	169.08	9	1 18 7.23	8 29 24.6	161.45
10	23 38 36.66	4 41 28.9	169.29	10	1 20 15.16	8 45 33.3	160.92
11	23 40 44.75	4 24 33.1	169.49	11	1 22 23.21	9 1 38.8	160.38
12	23 42 52.71	4 7 36.2	169.66	12	1 24 31.39	9 17 41.1	159.82
13	23 45 0.55	3 50 38.2	169.82	13	1 26 39.70	9 33 40.0	159.25
14	23 47 8.27	3 33 39.3	169.96	14	1 28 48.15	9 49 35.5	158.67
15	23 49 15.89	3 16 39.5	170.09	15	1 30 56.73	10 5 27.5	158.07
16	23 51 23.40	2 59 39.0	170.20	16	1 33 5.47	10 21 15.9	157.45
17	23 53 30.81	2 42 37.7	170.30	17	1 35 14.35	10 37 0.6	156.82
18	23 55 38.13	2 25 35.9	170.38	18	1 37 23.38	10 52 41.6	156.18
19	23 57 45.36	2 8 33.7	170.44	19	1 39 32.58	11 8 18.7	155.52
20	23 59 52.50	1 51 31.0	170.49	20	1 41 41.94	11 23 51.8	154.85
21	0 1 59.57	1 34 28.0	170.52	21	1 43 51.46	11 39 20.9	154.17
22	0 4 6.56	1 17 24.9	170.54	22	1 46 1.16	11 54 45.9	153.46
23	0 6 13.49	S. 1 0 21.7	170.54	23	1 48 11.03	N. 12 10 6.7	152.75
TUESDAY 22.				THURSDAY 24.			
0	0 8 20.35	S. 0 43 18.4	170.53	0	1 50 21.08	N. 12 25 23.2	152.03
1	0 10 27.16	0 26 15.2	170.50	1	1 52 31.32	12 40 35.4	151.28
2	0 12 33.91	S. 0 9 12.2	170.45	2	1 54 41.74	12 55 43.0	150.52
3	0 14 40.62	N. 0 7 50.5	170.39	3	1 56 52.35	13 10 46.2	149.75
4	0 16 47.29	0 24 52.8	170.31	4	1 59 3.17	13 25 44.7	148.97
5	0 18 53.92	0 41 54.7	170.22	5	2 1 14.18	13 40 38.5	148.17
6	0 21 0.53	0 58 56.0	170.11	6	2 3 25.39	13 55 27.5	147.35
7	0 23 7.11	1 15 56.6	169.98	7	2 5 36.82	14 10 11.6	146.53
8	0 25 13.67	1 32 56.5	169.84	8	2 7 48.45	14 24 50.8	145.68
9	0 27 20.21	1 49 55.6	169.69	9	2 10 0.30	14 39 24.9	144.83
10	0 29 26.75	2 6 53.7	169.52	10	2 12 12.37	14 53 53.9	143.96
11	0 31 33.29	2 23 50.8	169.33	11	2 14 24.66	15 8 23.0	143.07
12	0 33 39.84	2 40 46.8	169.13	12	2 16 37.17	15 22 52.1	142.17
13	0 35 46.39	2 57 41.6	168.91	13	2 18 49.91	15 37 21.2	141.26
14	0 37 52.95	3 14 35.0	168.68	14	2 21 2.88	15 51 50.3	140.33
15	0 39 59.53	3 31 27.1	168.43	15	2 23 16.00	16 6 19.4	139.39
16	0 42 6.14	3 48 17.7	168.17	16	2 25 29.55	16 20 48.5	138.44
17	0 44 12.77	4 5 6.7	167.89	17	2 27 43.33	16 35 17.6	137.47
18	0 46 19.44	4 21 54.1	167.60	18	2 29 57.34	16 49 46.7	136.49
19	0 48 26.15	4 38 39.7	167.29	19	2 32 11.58	17 14 15.8	135.49
20	0 50 32.91	4 55 23.4	166.97	20	2 34 26.16	17 28 44.9	134.47
21	0 52 39.71	5 12 5.3	166.64	21	2 36 40.98	17 43 14.0	133.44
22	0 54 46.57	5 28 45.1	166.28	22	2 38 56.04	17 57 43.1	132.39
23	0 56 53.50	5 45 22.8	165.92	23	2 41 11.34	18 12 12.2	131.33
24	0 59 0.49	N. 6 1 58.3		24	2 43 26.88	18 26 41.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>FRIDAY 25.</i>				<i>SUNDAY 27.</i>			
0	2 43 25.93	N.18 6 52.4	130.30	0	4 36 56.25	N.26 8 43.5	64.70
1	2 45 41.62	18 19 54.2	129.23	1	4 39 23.97	26 15 11.7	63.28
2	2 47 57.57	18 32 49.6	128.13	2	4 41 51.86	26 21 30.1	61.45
3	2 50 13.78	18 45 38.4	127.03	3	4 44 19.93	26 27 38.8	59.82
4	2 52 30.26	18 58 20.5	125.91	4	4 46 48.16	26 33 37.8	58.18
5	2 54 47.00	19 10 56.0	124.78	5	4 49 16.56	26 39 26.8	56.53
6	2 57 4.01	19 23 24.7	123.63	6	4 51 45.11	26 45 6.0	54.88
7	2 59 21.29	19 35 46.5	122.47	7	4 54 13.80	26 50 35.3	53.21
8	3 1 38.84	19 48 1.3	121.30	8	4 56 42.65	26 55 54.7	51.56
9	3 3 56.65	20 0 9.1	120.12	9	4 59 11.63	27 1 4.0	49.89
10	3 6 14.74	20 12 9.8	118.92	10	5 1 40.73	27 6 3.4	48.21
11	3 8 33.10	20 24 3.3	117.71	11	5 4 9.97	27 10 52.7	46.54
12	3 10 51.73	20 35 49.6	116.49	12	5 6 39.31	27 15 31.9	44.85
13	3 13 10.64	20 47 28.5	115.25	13	5 9 8.77	27 20 1.0	43.17
14	3 15 29.81	20 59 0.0	114.00	14	5 11 38.33	27 24 20.0	41.47
15	3 17 49.27	21 10 24.0	112.74	15	5 14 7.99	27 28 28.9	39.78
16	3 20 8.99	21 21 40.4	111.46	16	5 16 37.74	27 32 27.5	38.08
17	3 22 28.99	21 32 49.2	110.17	17	5 19 7.57	27 36 16.0	36.37
18	3 24 49.26	21 43 50.2	108.87	18	5 21 37.47	27 39 54.2	34.67
19	3 27 9.81	21 54 43.4	107.56	19	5 24 7.43	27 43 22.2	32.96
20	3 29 30.62	22 5 28.8	106.24	20	5 26 37.46	27 46 40.0	31.25
21	3 31 51.71	22 16 6.2	104.90	21	5 29 7.54	27 49 47.5	29.53
22	3 34 13.06	22 26 35.6	103.55	22	5 31 37.66	27 52 44.7	27.82
23	3 36 34.68	N.22 36 56.9	102.19	23	5 34 7.82	N.27 55 31.6	26.10
<i>FRIDAY 25.</i>				<i>MONDAY 28.</i>			
0	3 38 56.57	N.22 47 10.0	100.82	0	5 36 38.01	N.27 58 8.2	24.38
1	3 41 18.73	22 57 14.9	99.43	1	5 39 8.22	28 0 34.5	22.66
2	3 43 41.15	23 7 11.5	98.03	2	5 41 38.44	28 2 50.5	20.94
3	3 46 3.84	23 16 59.7	96.63	3	5 44 8.67	28 4 56.1	19.22
4	3 48 26.78	23 26 39.5	95.21	4	5 46 38.90	28 6 51.5	17.50
5	3 50 49.99	23 36 10.7	93.78	5	5 49 9.11	28 8 36.5	15.78
6	3 53 13.45	23 45 33.4	92.34	6	5 51 39.30	28 10 11.2	14.06
7	3 55 37.17	23 54 47.4	90.89	7	5 54 9.46	28 11 35.5	12.34
8	3 58 1.13	24 3 52.7	89.42	8	5 56 39.59	28 12 49.6	10.63
9	4 0 25.35	24 12 49.2	87.95	9	5 59 9.68	28 13 53.4	8.91
10	4 2 49.82	24 21 36.9	86.47	10	6 1 39.71	28 14 46.8	7.20
11	4 5 14.53	24 30 15.7	84.97	11	6 4 9.68	28 15 30.0	5.48
12	4 7 39.48	24 38 45.6	83.47	12	6 6 39.58	28 16 2.9	3.77
13	4 10 4.67	24 47 6.4	81.96	13	6 9 9.41	28 16 25.5	2.06
14	4 12 30.09	24 55 18.2	80.43	14	6 11 39.15	28 16 37.9	0.36
15	4 14 55.74	25 3 20.8	78.90	15	6 14 8.80	28 16 40.1	1.34
16	4 17 21.62	25 11 14.1	77.36	16	6 16 38.35	28 16 32.1	3.04
17	4 19 47.72	25 18 58.3	75.80	17	6 19 7.78	28 16 13.8	4.73
18	4 22 14.03	25 26 33.1	74.24	18	6 21 37.10	28 15 45.5	6.42
19	4 24 40.56	25 33 58.5	72.67	19	6 24 6.29	28 15 7.0	8.10
20	4 27 7.30	25 41 14.6	71.10	20	6 26 35.35	28 14 18.3	9.78
21	4 29 34.25	25 48 21.1	69.51	21	6 29 4.27	28 13 19.6	11.46
22	4 32 1.39	25 55 18.2	67.91	22	6 31 33.05	28 12 10.9	13.13
23	4 34 28.73	26 2 5.7	66.31	23	6 34 1.66	28 10 52.1	14.79
24	4 36 56.25	N.26 8 43.5		24	6 36 30.11	N.28 9 23.4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>TUESDAY 29.</i>				<i>THURSDAY 31.</i>			
0	h m s 6 36 30.11	N. 28 9 23.4	16.45	0	h m s 8 29 59.77	N. 23 59 24.2	84.96
1	6 38 58.39	28 7 44.7	18.10	1	8 32 13.20	23 50 54.4	86.10
2	6 41 26.49	28 5 56.1	19.75	2	8 34 26.24	23 42 17.8	87.22
3	6 43 54.40	28 3 57.6	21.38	3	8 36 38.90	23 33 34.5	88.33
4	6 46 22.12	28 1 49.3	23.02	4	8 38 51.16	23 24 44.5	89.43
5	6 48 49.63	27 59 31.2	24.64	5	8 41 3.03	23 15 47.9	90.51
6	6 51 16.94	27 57 3.4	26.26	6	8 43 14.52	23 6 44.8	91.59
7	6 53 44.03	27 54 25.8	27.87	7	8 45 25.61	22 57 35.3	92.64
8	6 56 10.90	27 51 38.6	29.47	8	8 47 36.32	22 48 19.4	93.69
9	6 58 37.54	27 48 41.8	31.07	9	8 49 46.63	22 38 57.3	94.72
10	7 1 3.95	27 45 35.4	32.65	10	8 51 56.55	22 29 29.0	95.74
11	7 3 30.11	27 42 19.5	34.23	11	8 54 6.08	22 19 54.6	96.74
12	7 5 56.02	27 38 54.1	35.80	12	8 56 15.23	22 10 14.1	97.73
13	7 8 21.68	27 35 19.3	37.36	13	8 58 23.98	22 0 27.7	98.71
14	7 10 47.07	27 31 35.2	38.91	14	9 0 32.34	21 50 35.4	99.68
15	7 13 12.20	27 27 41.7	40.45	15	9 2 40.32	21 40 37.4	100.63
16	7 15 37.05	27 23 39.0	41.98	16	9 4 47.90	21 30 33.6	101.57
17	7 18 1.63	27 19 27.2	43.50	17	9 6 55.10	21 20 24.2	102.49
18	7 20 25.92	27 15 6.2	45.01	18	9 9 1.92	21 10 9.2	103.41
19	7 22 49.92	27 10 36.1	46.51	19	9 11 8.36	20 59 48.8	104.31
20	7 25 13.62	27 5 57.0	48.00	20	9 13 14.41	20 49 22.9	105.19
21	7 27 37.02	27 1 9.0	49.48	21	9 15 20.08	20 38 51.8	106.07
22	7 30 0.12	26 56 12.2	50.95	22	9 17 25.37	20 28 15.4	106.93
23	7 32 22.90	N. 26 51 6.5	52.41	23	9 19 30.28	N. 20 17 33.8	107.78
<i>WEDNESDAY 30.</i>				<i>FRIDAY, AUGUST 1.</i>			
0	7 34 45.37	N. 26 45 52.0	53.85	0	9 21 34.82	N. 20 6 47.1	
1	7 37 7.52	26 40 28.9	55.29				
2	7 39 29.34	26 34 57.1	56.71				
3	7 41 50.83	26 29 16.9	58.13				
4	7 44 11.98	26 23 28.1	59.53				
5	7 46 32.80	26 17 30.9	60.92				
6	7 48 53.28	26 11 25.4	62.30				
7	7 51 13.41	26 5 11.7	63.66				
8	7 53 33.19	25 58 49.7	65.02				
9	7 55 52.62	25 52 19.6	66.36				
10	7 58 11.69	25 45 41.5	67.69				
11	8 0 30.41	25 38 55.3	69.01				
12	8 2 48.75	25 32 1.3	70.31				
13	8 5 6.73	25 24 59.4	71.60				
14	8 7 24.35	25 17 49.8	72.88				
15	8 9 41.59	25 10 32.5	74.15				
16	8 11 58.46	25 3 7.6	75.40				
17	8 14 14.96	24 55 35.2	76.64				
18	8 16 31.07	24 47 55.4	77.87				
19	8 18 46.81	24 40 8.2	79.09				
20	8 21 2.17	24 32 13.6	80.29				
21	8 23 17.15	24 24 11.9	81.48				
22	8 25 31.74	24 16 3.0	82.65				
23	8 27 45.95	24 7 47.1	83.82				
24	8 29 59.77	N. 23 59 24.2					

PHASES OF THE MOON.

- | | d | h | m |
|-----------------|---|---|-----------|
| ☉ New Moon | - | - | 1 21 30.3 |
| ☽ First Quarter | - | - | 9 19 22.2 |
| ☾ Full Moon | - | - | 17 |
| ☾ Last Quarter | - | - | 24 |
| ☉ New Moon | - | - | : |

- | | | | |
|-----------|---|---|---|
| ☾ Apogee | - | - | - |
| ☾ Perigee | - | - | - |

MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Star's Name and Position.		Noon.	P.L. of diff.	III ^b .	P.L. of diff.	VI ^b .	P.L. of diff.	IX ^b .	P.L. of diff.
			^o ⁱ ^{''}		^o ⁱ ^{''}		^o ⁱ ^{''}		^o ⁱ ^{''}	
4	SUN	W.	25 47 25	3206	27 13 27	3212	28 39 22	3418	30 5 10	3225
	Mars	E.	68 33 41	2939	67 2 12	2952	65 30 59	2965	64 0 2	2977
	Spica η	E.	74 6 10	2785	72 31 22	2797	70 56 50	2808	69 22 33	2820
5	SUN	W.	37 11 51	3268	38 36 40	3277	40 1 18	3286	41 25 46	3296
	Mars	E.	56 29 8	3038	54 59 42	3049	53 30 30	3061	52 1 32	3072
	Spica η	E.	61 34 57	2878	60 2 10	2889	58 29 37	2900	56 57 18	2910
	Antares	E.	107 28 26	2875	105 55 35	2887	104 22 59	2897	102 50 36	2908
6	SUN	W.	48 25 21	3341	49 48 45	3350	51 11 59	3358	52 35 3	3366
	Mars	E.	44 40 3	3124	43 12 22	3134	41 44 53	3143	40 17 36	3152
	Spica η	E.	49 18 59	2960	47 47 56	2970	46 17 6	2978	44 46 26	2987
	Antares	E.	95 11 57	2957	93 40 50	2966	92 9 54	2974	90 39 9	2982
7	SUN	W.	59 28 11	3402	60 50 25	3409	62 12 31	3415	63 34 31	3420
	Regulus	W.	17 14 3	3107	18 42 4	3100	20 10 13	3096	21 38 27	3094
	Mars	E.	33 3 40	3192	31 37 21	3198	30 11 9	3204	28 45 5	3211
	Spica η	E.	37 15 40	3025	35 45 58	3032	34 16 25	3038	32 47 0	3044
	Antares	E.	83 7 51	3019	81 38 2	3026	80 8 21	3031	78 38 47	3036
8	SUN	W.	70 23 9	3440	71 44 40	3444	73 6 7	3446	74 27 31	3447
	Regulus	W.	29 0 5	3091	30 28 26	3091	31 56 47	3091	33 25 8	3091
	Spica η	E.	25 21 39	3071	23 52 54	3075	22 24 14	3079	20 55 39	3083
	Antares	E.	71 12 26	3058	69 43 25	3060	68 14 26	3063	66 45 31	3065
	α Aquilæ	E.	117 11 38	4156	116 2 30	4131	114 52 58	4107	113 43 3	4086
9	SUN	W.	81 14 14	3450	82 35 34	3449	83 56 55	3447	85 18 18	3445
	Regulus	W.	40 47 3	3086	42 15 30	3084	43 43 59	3081	45 12 32	3079
	Antares	E.	59 21 19	3068	57 52 30	3066	56 23 59	3065	54 54 47	3063
	α Aquilæ	E.	107 48 37	3995	106 36 52	3979	105 24 52	3965	104 12 38	3951
10	SUN	W.	92 6 0	3427	93 27 46	3422	94 49 37	3416	96 11 35	3410
	Regulus	W.	52 36 13	3060	54 5 12	3054	55 34 18	3048	57 3 32	3043
	Antares	E.	47 29 40	3047	46 0 25	3043	44 31 5	3037	43 1 38	3031
	α Aquilæ	E.	98 8 16	3893	96 54 49	3883	95 41 12	3873	94 27 25	3864
11	SUN	W.	103 3 18	3373	104 26 5	3364	105 49 3	3355	107 12 11	3345
	Regulus	W.	64 31 40	3005	66 1 47	2997	67 32 3	2988	69 2 31	2978
	Antares	E.	35 32 29	2997	34 2 12	2989	32 31 45	2980	31 1 7	2971
	α Aquilæ	E.	88 16 20	3826	87 1 45	3820	85 47 3	3815	84 32 16	3810
12	SUN	W.	114 10 49	3291	115 35 11	3278	116 59 48	3266	118 24 39	3254
	Regulus	W.	76 37 58	2926	78 9 44	2914	79 41 45	2902	81 14 1	2890
	Mars	W.	24 18 7	3095	25 46 23	3083	27 14 54	3071	28 43 39	3058
	Spica η	W.	22 34 56	2932	24 6 34	2919	25 38 28	2905	27 10 40	2892
	α Aquilæ	E.	78 17 15	3794	77 2 7	3794	75 46 59	3794	74 31 51	3795
	Fomalhaut	E.	105 24 46	3134	103 57 17	3119	102 29 30	3105	101 1 26	3091
13	SUN	W.	125 32 42	3187	126 59 7	3173	128 25 48	3158	129 52 47	3145
	Regulus	W.	88 59 24	2825	90 33 20	2811	92 7 33	2796	93 42 6	2783
	Mars	W.	36 11 27	2990	37 41 52	2977	39 12 34	2962	40 43 35	2948
	Spica η	W.	34 55 59	2823	36 29 57	2809	38 4 13	2795	39 38 48	2779
	α Aquilæ	E.	68 16 57	3822	67 2 17	3832	65 47 48	3844	64 33 31	3858
	Fomalhaut	E.	93 36 43	3019	92 6 54	3004	90 36 46	2991	89 6 22	2976

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
4	SUN W.	31	30	50	3233	32	56	20	3241	34	21	41	3250	35	46	51	3259
	Mars E.	62	29	21	2989	60	58	55	3001	59	28	44	3014	57	58	49	3026
	Spica ♀ E.	67	48	31	2832	66	14	45	2844	64	41	14	2855	63	7	58	2867
5	SUN W.	42	50	2	3305	44	14	8	3314	45	38	3	3324	47	1	47	3332
	Mars E.	50	32	48	3083	49	4	17	3094	47	36	0	3104	46	7	55	3114
	Spica ♀ E.	55	25	12	2921	53	53	20	2931	52	21	40	2941	50	50	13	2951
	Antares E.	101	18	27	2917	99	46	30	2928	98	14	47	2938	96	43	16	2947
6	SUN W.	53	57	58	3374	55	20	44	3382	56	43	21	3389	58	5	50	3396
	Mars E.	38	50	29	3160	37	23	32	3169	35	56	46	3176	34	30	8	3184
	Spica ♀ E.	43	15	57	2995	41	45	38	3003	40	15	29	3011	38	45	30	3018
	Antares E.	89	8	34	2990	87	38	9	2998	86	7	54	3006	84	37	48	3013
7	SUN W.	64	56	25	3424	66	18	14	3430	67	39	57	3434	69	1	35	3438
	Regulus W.	23	6	44	3092	24	35	3	3091	26	3	23	3091	27	31	44	3091
	Mars E.	27	19	9	3216	25	53	19	3221	24	27	35	3225	23	1	56	3230
	Spica ♀ E.	31	17	42	3051	29	48	32	3056	28	19	28	3061	26	50	31	3065
	Antares E.	77	9	19	3042	75	39	58	3046	74	10	42	3051	72	41	32	3054
8	SUN W.	75	48	54	3449	77	10	15	3450	78	31	35	3451	79	52	54	3450
	Regulus W.	34	53	29	3090	36	21	51	3089	37	50	14	3089	39	18	37	3087
	Spica ♀ E.	19	27	9	3089	17	58	46	3093	16	30	28	3100	15	2	18	3106
	Antares E.	65	16	38	3066	63	47	47	3067	62	18	57	3068	60	50	8	3068
	α Aquilæ E.	112	32	48	4065	111	22	12	4045	110	11	17	4028	109	0	5	4012
9	SUN W.	86	39	44	3443	88	1	12	3439	89	22	44	3436	90	44	20	3432
	Regulus W.	46	41	7	3075	48	9	47	3072	49	38	31	3069	51	7	19	3064
	Antares E.	53	25	52	3061	51	56	55	3058	50	27	54	3055	48	58	49	3051
	α Aquilæ E.	103	0	10	3938	101	47	29	3926	100	34	36	3915	99	21	32	3904
10	SUN W.	97	33	40	3404	98	55	52	3397	100	18	12	3389	101	40	41	3382
	Regulus W.	58	32	52	3035	60	2	21	3029	61	31	58	3022	63	1	44	3014
	Antares E.	41	32	5	3025	40	2	23	3019	38	32	34	3012	37	2	36	3005
	α Aquilæ E.	93	13	29	3855	91	59	24	3847	90	45	10	3840	89	30	49	3832
11	SUN W.	108	35	30	3335	109	59	1	3325	111	22	44	3313	112	46	40	3302
	Regulus W.	70	33	11	2969	72	4	3	2958	73	35	8	2948	75	6	26	2937
	Antares E.	29	30	18	2961	27	59	16	2952	26	28	3	2941	24	56	36	2931
	α Aquilæ E.	83	17	24	3805	82	2	27	3801	80	47	26	3798	79	32	22	3795
	SUN W.	119	49	44	3241	121	15	5	3228	122	40	41	3214	124	6	33	3200
12	Regulus W.	82	46	32	2877	84	19	20	2865	85	52	24	2852	87	25	45	2838
	Mars W.	30	12	40	3045	31	41	57	3032	33	11	30	3018	34	41	20	3005
	Spica ♀ W.	28	43	9	2879	30	15	55	2865	31	48	59	2852	33	22	20	2831
	α Aquilæ E.	73	16	44	3798	72	1	40	3802	70	46	40	3807	69	31	45	381
	Fomalhaut E.	99	33	5	3076	98	4	26	3061	96	35	29	3047	95	6	15	301
13	SUN W.	131	20	2	3130	132	47	35	3116	134	15	25	3101	135	43	33	31
	Regulus W.	95	16	56	2768	96	52	6	2753	98	27	35	2739	100	3	23	
	Mars W.	42	14	53	2932	43	46	31	2917	45	18	28	2902	46	50	44	
	Spica ♀ W.	41	13	43	2765	42	48	57	2750	44	24	30	2735	46	0	23	
	α Aquilæ E.	63	19	28	3874	62	5	42	3893	60	52	15	3915	59	39	10	
	Fomalhaut E.	87	35	39	2962	86	4	39	2949	84	33	22	2935	83	1	48	

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			P.L. of diff.	III ^b .			P.L. of diff.	VI ^b .			P.L. of diff.	IX ^b .			P.L. of diff.
		o	i	''		o	i	''		o	i	''		o	i	''	
14	Regulus W.	101	39	31	2709	103	15	59	2694	104	52	47	2679	106	29	55	2664
	Mars W.	48	23	20	2872	49	56	15	2856	51	29	31	2841	53	3	6	2824
	Spica ♀ W.	47	36	36	2704	49	13	10	2689	50	50	4	2674	52	27	19	2659
	α Aquilæ E.	58	26	31	3968	57	14	19	4001	56	2	40	4037	54	51	37	4078
	Fomalhaut E.	81	29	56	2909	79	57	48	2895	78	25	23	2883	76	52	42	2870
	α Pegasi E.	102	35	20	3037	101	5	53	3017	99	36	1	2999	98	5	47	2981
Jupiter E.	119	10	7	2716	117	33	49	2701	115	57	10	2686	114	20	11	2671	
15	Mars W.	60	56	11	2746	62	31	50	2731	64	7	49	2715	65	44	9	2699
	Spica ♀ W.	60	38	45	2582	62	18	5	2566	63	57	46	2551	65	37	48	2536
	Antares W.	14	44	26	2585	16	23	42	2569	18	3	20	2553	19	43	20	2538
	α Aquilæ E.	49	8	7	4377	48	2	25	4461	46	57	58	4556	45	54	55	4662
	Fomalhaut E.	69	5	29	2815	67	31	21	2805	65	57	0	2797	64	22	28	2789
	α Pegasi E.	90	29	11	2898	88	56	50	2884	87	24	11	2870	85	51	13	2856
Jupiter E.	106	10	4	2593	104	31	0	2577	102	51	34	2563	101	11	48	2547	
16	Spica ♀ W.	74	3	8	2463	75	45	13	2449	77	27	38	2436	79	10	22	2422
	Mars W.	73	50	55	2625	75	29	16	2611	77	7	56	2596	78	46	56	2582
	Antares W.	28	8	38	2462	29	50	44	2448	31	33	10	2435	33	15	55	2421
	Fomalhaut E.	56	27	40	2765	54	52	26	2765	53	17	12	2765	51	41	58	2768
	α Pegasi E.	78	2	16	2798	76	27	46	2789	74	53	3	2781	73	18	10	2773
	Jupiter E.	92	47	44	2474	91	5	54	2460	89	23	44	2446	87	41	15	2432
17	Spica ♀ W.	87	48	43	2359	89	33	17	2348	91	18	7	2336	93	3	14	2325
	Mars W.	87	6	33	2518	88	47	21	2507	90	28	25	2495	92	9	46	2484
	Antares W.	41	54	24	2357	43	39	0	2346	45	23	52	2335	47	9	1	2324
	Fomalhaut E.	43	47	45	2819	42	13	42	2840	40	40	6	2866	39	7	3	2897
	α Pegasi E.	65	21	51	2755	63	46	24	2755	62	10	57	2758	60	35	34	2761
	Jupiter E.	79	4	5	2368	77	19	45	2357	75	35	8	2346	73	50	15	2335
α Arietis E.	106	25	45	2409	104	42	23	2396	102	58	43	2384	101	14	46	2373	
18	Spica ♀ W.	101	52	36	2277	103	39	9	2268	105	25	55	2260	107	12	53	2253
	Mars W.	100	40	13	2434	102	23	0	2426	104	5	58	2417	105	49	8	2410
	Antares W.	55	58	33	2275	57	45	9	2266	59	31	58	2259	61	18	58	2251
	α Pegasi E.	52	40	49	2815	51	6	41	2834	49	32	57	2858	47	59	44	2885
	Jupiter E.	65	1	58	2285	63	15	37	2276	61	29	3	2268	59	42	17	2261
	α Arietis E.	92	31	5	2322	90	45	38	2314	88	59	59	2306	87	14	9	2299
19	Antares W.	70	16	35	2220	72	4	33	2215	73	52	38	2211	75	40	49	2207
	α Pegasi E.	40	24	23	3105	38	56	19	3171	37	29	35	3249	36	4	24	3340
	Jupiter E.	50	45	51	2229	48	58	7	2224	47	10	16	2220	45	22	18	2216
	α Arietis E.	78	22	30	2270	76	35	46	2266	74	48	56	2262	73	2	1	2260
	Aldebaran E.	108	54	4	2283	107	7	39	2277	105	21	5	2271	103	34	23	2266
20	Antares W.	84	43	0	2194	86	31	36	2193	88	20	14	2192	90	8	53	2192
	α Aquilæ W.	45	39	22	4224	46	47	25	4103	47	57	24	3993	49	9	10	3894
	Jupiter E.	36	21	13	2202	34	32	49	2202	32	44	24	2201	30	55	58	2200
	α Arietis E.	64	6	40	2254	62	19	33	2255	60	32	27	2256	58	45	23	2258
	Aldebaran E.	94	39	24	2251	92	52	13	2249	91	4	59	2249	89	17	45	2248
21	Antares W.	99	12	5	2196	101	0	39	2198	102	49	10	2200	104	37	37	2203
	α Aquilæ W.	55	30	15	3530	56	50	6	3478	58	10	55	3430	59	32	38	3387
	α Arietis E.	49	51	11	2281	48	4	43	2287	46	18	24	2295	44	32	17	2304

MEAN TIME.

LUNAR DISTANCES.

the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .		
		P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.				
4	Regulus W.	108 7 23	2649	109 45 12	2634	111 23 21	2619	113 1 50	2604				
	Mars W.	54 37 2	2808	56 11 19	2793	57 45 56	2778	59 20 53	2762				
	Spica η W.	54 4 54	2643	55 42 51	2628	57 21 8	2612	58 59 46	2597				
	α Aquilæ E.	53 41 14	4125	52 31 36	4178	51 22 49	4236	50 14 57	4303				
	Fomalhaut E.	75 19 45	2859	73 46 33	2847	72 13 6	2835	70 39 24	2825				
	α Pegasi E.	96 35 11	2963	95 4 12	2946	93 32 52	2931	92 1 12	2914				
5	Jupiter E.	112 42 52	2655	111 5 11	2640	109 27 10	2624	107 48 47	2609				
	Mars W.	67 20 50	2684	68 57 51	2669	70 35 12	2654	72 12 53	2639				
	Spica η W.	67 18 11	2521	68 58 55	2507	70 39 59	2492	72 21 24	2478				
	Antares W.	21 23 41	2522	23 4 24	2507	24 45 28	2492	26 26 53	2477				
	α Aquilæ E.	44 53 23	4781	43 53 31	4916	42 55 29	5067	41 59 26	5239				
	Fomalhaut E.	62 47 46	2782	61 12 55	2776	59 37 56	2772	58 2 51	2767				
6	α Pegasi E.	84 17 57	2843	82 44 25	2831	81 10 37	2819	79 36 33	2808				
	Jupiter E.	99 31 40	2532	97 51 12	2517	96 10 23	2503	94 29 14	2488				
	Spica η W.	80 53 25	2409	82 36 47	2396	84 20 28	2383	86 4 27	2371				
	Mars W.	80 26 15	2569	82 5 52	2556	83 45 48	2543	85 26 2	2530				
	Antares W.	34 58 59	2408	36 42 23	2395	38 26 5	2382	40 10 6	2370				
	Fomalhaut E.	50 6 48	2773	48 31 45	2780	46 56 51	2789	45 22 9	2803				
17	α Pegasi E.	71 43 7	2767	70 7 56	2763	68 32 39	2759	66 57 17	2756				
	Jupiter E.	85 58 26	2419	84 15 19	2405	82 31 52	2393	80 48 8	2380				
	Spica η W.	94 48 37	2315	96 34 15	2304	98 20 8	2295	100 6 15	2285				
	Mars W.	93 51 22	2472	95 33 14	2462	97 15 20	2453	98 57 40	2443				
	Antares W.	48 54 26	2313	50 40 6	2303	52 26 1	2293	54 12 10	2284				
	Fomalhaut E.	37 34 40	2934	36 3 4	2979	34 32 25	3031	33 2 50	3092				
18	α Pegasi E.	59 0 15	2767	57 25 4	2775	55 50 4	2786	54 15 18	2799				
	Jupiter E.	72 5 6	2324	70 19 41	2313	68 34 1	2303	66 48 6	2294				
	α Arietis E.	99 30 32	2362	97 46 2	2351	96 1 17	2341	94 16 18	2332				
	Spica η W.	109 0 2	2246	110 47 21	2239	112 34 50	2233	114 22 28	2227				
	Mars W.	107 32 29	2402	109 16 1	2396	110 59 41	2389	112 43 31	2383				
	Antares W.	63 6 10	2244	64 53 32	2237	66 41 4	2231	68 28 45	2225				
19	α Pegasi E.	46 27 6	2916	44 55 8	2953	43 23 56	2996	41 53 39	3046				
	Jupiter E.	57 55 20	2254	56 8 12	2247	54 20 54	2241	52 33 27	2235				
	α Arietis E.	85 28 8	2292	83 41 57	2285	81 55 36	2280	80 9 7	2275				
	Antares W.	77 29 6	2203	79 17 29	2201	81 5 55	2198	82 54 26	2196				
	α Pegasi E.	34 40 59	3447	33 19 35	3571	32 0 29	3716	30 43 59	3888				
	Jupiter E.	43 34 14	2212	41 46 5	2209	39 57 51	2207	38 9 34	2204				
20	α Arietis E.	71 15 2	2257	69 27 59	2255	67 40 54	2254	65 53 47	2254				
	Aldebaran E.	101 47 33	2262	100 0 38	2259	98 13 38	2256	96 26 33	2253				
	Antares W.	91 57 33	2192	93 46 12	2192	95 34 51	2193	97 23 29	2194				
	α Aquilæ W.	50 22 36	3806	51 37 32	3726	52 53 52	3654	54 11 28	3588				
	Jupiter E.	29 7 31	2200	27 19 3	2201	25 30 37	2202	23 42 12	2203				
	α Arietis E.	56 58 22	2261	55 11 25	2265	53 24 34	2269	51 37 49	2274				
21	Aldebaran E.	87 30 29	2249	85 43 14	2249	83 56 0	2251	82 8 48	2253				
	Antares W.	106 26 0	2206	108 14 19	2209	110 2 33	2213	111 50 41	2217				
	α Aquilæ W.	60 55 9	3349	62 18 24	3315	63 42 18	3284	65 6 8	3258				
	α Arietis E.	42 46 23	2313	41 0 43	2325	39 15 20	2338	37 30					

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			III ^b .			VI ^b .			IX ^b .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.
21	Aldebaran E.	80	21	39	2255	78	34	33	2258	76	47	31	2261	75	0	34	2261
	Saturn E.	109	44	58	2257	107	57	55	2258	106	10	54	2260	104	23	59	2260
	SUN E.	131	33	9	2222	129	52	26	2222	128	11	44	2224	126	31	4	2224
22	α Aquilæ W.	66	31	50	2233	67	57	20	2212	69	23	15	2193	70	49	32	2193
	Fomalhaut W.	35	2	24	2277	36	35	12	2228	38	9	3	2287	39	43	48	2287
	α Arietis E.	35	45	34	2369	34	1	15	2388	32	17	23	2410	30	34	2	2410
	Aldebaran E.	66	7	23	2290	64	21	9	2296	62	35	4	2304	60	49	10	2304
	Saturn E.	95	30	6	2279	93	43	36	2284	91	57	13	2288	90	10	56	2288
	SUN E.	118	8	32	2540	116	28	15	2545	114	48	4	2549	113	7	59	2549
23	α Aquilæ W.	78	4	52	3130	79	32	25	3126	81	0	3	3124	82	27	44	3124
	Fomalhaut W.	47	47	21	2637	49	25	25	2624	51	3	47	2613	52	42	24	2613
	α Pegasi W.	30	58	56	3749	32	14	51	3614	33	33	10	3499	34	53	36	3499
	Aldebaran E.	52	2	39	2357	50	18	3	2368	48	33	43	2380	46	49	40	2380
	Saturn E.	81	21	29	2322	79	36	1	2328	77	50	42	2335	76	5	31	2335
	SUN E.	104	49	20	2581	103	9	59	2588	101	30	48	2594	99	51	45	2594
24	α Aquilæ W.	89	45	41	3143	91	12	59	3151	92	40	7	3161	94	7	1	3161
	Fomalhaut W.	60	57	57	2580	62	37	20	2579	64	16	44	2579	65	56	8	2579
	α Pegasi W.	41	59	22	3077	43	28	0	3036	44	57	28	3001	46	27	40	3001
	Jupiter W.	21	1	25	2321	22	46	54	2328	24	32	13	2335	26	17	22	2335
	Aldebaran E.	38	14	28	2474	36	32	38	2494	34	51	17	2517	33	10	28	2517
	Saturn E.	67	22	21	2378	65	38	15	2386	63	54	20	2394	62	10	37	2394
	SUN E.	91	38	54	2637	90	0	49	2645	88	22	55	2652	86	45	11	2652
25	α Aquilæ W.	101	17	55	3248	102	43	7	3267	104	7	57	3288	105	32	22	3288
	Fomalhaut W.	74	12	39	2592	75	51	45	2596	77	30	45	2601	79	9	38	2601
	α Pegasi W.	54	6	50	2868	55	39	50	2855	57	13	6	2845	58	46	35	2845
	Jupiter W.	35	0	33	2378	36	44	39	2385	38	28	35	2393	40	12	20	2393
	Aldebaran E.	24	57	4	2741	23	21	19	2804	21	46	56	2881	20	14	13	2881
	Saturn E.	53	35	0	2446	51	52	31	2455	50	10	14	2465	48	28	11	2465
	SUN E.	78	39	12	2701	77	2	33	2710	75	26	6	2717	73	49	49	2717
26	Fomalhaut W.	87	22	4	2640	89	0	5	2647	90	37	56	2656	92	15	35	2656
	α Pegasi W.	66	36	13	2814	68	10	22	2813	69	44	33	2813	71	18	44	2813
	Jupiter W.	48	48	21	2439	50	31	0	2447	52	13	28	2455	53	55	45	2455
	α Arietis W.	22	59	17	2746	24	34	56	2716	26	11	14	2693	27	48	4	2693
	Saturn E.	40	1	31	2528	38	20	57	2540	36	40	40	2553	35	0	40	2553
	SUN E.	65	51	19	2771	64	16	13	2779	62	41	17	2788	61	6	34	2788
	Fomalhaut W.	100	20	53	2712	101	57	17	2723	103	33	26	2734	105	9	21	2734
27	α Pegasi W.	79	9	5	2828	80	42	56	2834	82	16	40	2839	83	50	17	2839
	Jupiter W.	62	24	24	2502	64	5	35	2510	65	46	34	2518	67	27	22	2518
	α Arietis W.	35	56	32	2635	37	34	39	2634	39	12	48	2633	40	50	58	2633
	Saturn E.	26	45	49	2652	25	8	5	2675	23	30	51	2702	21	54	13	2702
	SUN E.	53	16	0	2845	51	42	30	2855	50	9	13	2864	48	36	8	2864
	Fomalhaut W.	87	22	4	2640	89	0	5	2647	90	37	56	2656	92	15	35	2656
28	α Pegasi W.	91	36	9	2884	93	8	48	2894	94	41	15	2904	96	13	29	2904
	Jupiter W.	75	48	31	2567	77	28	11	2575	79	7	40	2584	80	46	57	2584
	α Arietis W.	49	1	14	2648	50	39	4	2653	52	16	47	2658	53	54	23	2658
	Aldebaran W.	19	47	19	3083	21	15	49	3021	22	45	36	2971	24	16	25	2971
	SUN E.	40	54	6	2928	39	22	23	2939	37	50	54	2951	36	19	40	2951

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		°	'	"	°	'	"	°	'	"	°	'	"				
21	Aldebaran E.	73	13	42	2268	71	26	56	2273	69	40	17	2278	67	53	46	2284
	Saturn E.	102	37	1	2265	100	50	10	2268	99	3	23	2272	97	16	42	2275
	SUN E.	124	50	26	2528	123	9	52	2530	121	29	21	2533	119	48	54	2537
22	α Aquilæ W.	72	16	8	3163	73	43	1	3152	75	10	7	3143	76	37	25	3135
	Fomalhaut W.	41	19	21	2720	42	55	34	2695	44	32	21	2672	46	9	38	2653
	α Arietis E.	28	51	17	2464	27	9	13	2499	25	27	58	2540	23	47	40	2589
	Aldebaran E.	59	3	27	2319	57	17	55	2328	55	32	36	2337	53	47	31	2346
	Saturn E.	88	24	47	2298	86	38	45	2304	84	52	51	2310	83	7	6	2315
	SUN E.	111	28	0	2559	109	48	9	2564	108	8	25	2569	106	28	48	2576
23	α Aquilæ W.	83	55	25	3124	85	23	5	3126	86	50	43	3131	88	18	15	3136
	Fomalhaut W.	54	21	14	2596	56	0	15	2590	57	39	23	2585	59	18	38	2582
	α Pegasi W.	36	15	53	3315	37	39	47	3241	39	5	7	3178	40	31	42	3124
	Aldebaran E.	45	5	55	2407	43	22	30	2422	41	39	26	2438	39	56	45	2455
	Saturn E.	74	20	34	2348	72	35	45	2356	70	51	7	2363	69	6	39	2370
	SUN E.	98	12	52	2608	96	34	8	2615	94	55	33	2622	93	17	8	2630
24	α Aquilæ W.	95	33	46	3184	97	0	14	3198	98	26	26	3213	99	52	20	3229
	Fomalhaut W.	67	35	32	2580	69	14	54	2582	70	54	13	2585	72	33	28	2588
	α Pegasi W.	47	58	31	2943	49	29	56	2920	51	1	50	2900	52	34	9	2883
	Jupiter W.	28	2	21	2348	29	47	10	2356	31	31	48	2363	33	16	16	2371
	Aldebaran E.	31	30	15	2573	29	50	43	2606	28	11	56	2643	26	34	0	2688
	SUN E.	85	7	37	2669	83	30	15	2676	81	53	3	2684	80	16	2	2692
25	α Aquilæ W.	106	56	20	3337	108	19	49	3364	109	42	47	3392	111	5	13	3422
	Fomalhaut W.	80	48	24	2612	82	27	2	2618	84	5	32	2626	85	43	52	2632
	α Pegasi W.	60	20	16	2829	61	54	6	2824	63	28	3	2819	65	2	6	2816
	Jupiter W.	41	55	54	2408	43	39	17	2416	45	22	29	2424	47	5	30	2431
	Aldebaran E.	18	43	31	3097	17	15	18	3254	15	50	13	3463	14	29	8	3747
	SUN E.	72	13	44	2735	70	37	51	2744	69	2	9	2752	67	26	38	2761
26	Fomalhaut W.	93	53	3	2672	95	30	20	2682	97	7	24	2692	98	44	15	2702
	α Pegasi W.	72	52	54	2815	74	27	2	2818	76	1	7	2820	77	35	9	2824
	Jupiter W.	55	37	51	2470	57	19	46	2478	59	1	30	2486	60	43	3	2494
	α Arietis W.	29	25	17	2661	31	2	49	2652	32	40	34	2644	34	18	29	2638
	Saturn E.	33	20	59	2581	31	41	38	2596	30	2	38	2613	28	24	1	2632
	SUN E.	59	32	3	2807	57	57	44	2816	56	23	37	2825	54	4		2825
27	Fomalhaut W.	106	44	59	2758	108	20	22	2771	109	55	28	2785	111			
	α Pegasi W.	85	23	46	2852	86	57	7	2859	88	30	18	2867				
	Jupiter W.	69	7	58	2534	70	48	24	2543	72	28	38	2551				
	α Arietis W.	42	29	8	2635	44	7	15	2637	45	45	19	2640				
	Saturn E.	20	18	17	2769	18	43	9	2814	17	9	0	287				
	SUN E.	47	3	17	2885	45	30	39	2895	43	58	14	290				
28	α Pegasi W.	97	45	30	2925	99	17	17	2937	100	48	49					
	Jupiter W.	82	26	3	2601	84	4	57	2610	85	43	39					
	α Arietis W.	55	31	53	2669	57	9	14	2675	58	46	27					
	Aldebaran W.	25	48	2	2903	27	20	17	2880	28	53	1					
	SUN E.	34	48	42	2977	33	18	0	2989	31	47	34					

CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 15^h 30^m, MEAN TIME.

Day of the Month.	West.	East.
1	4 [.] 3 [.]	○ 1 [.]
2	'4 2 [.] 1 [.]	'3 ○
3	'4	○ 1 [.] 3 [.]
4	'4 '1	○ 2 [.] 3 [.]
5	'4 2 [.]	○ 1 [.] 3 [.]
6	'2 '4 3 [.] 1 [.]	○
7	3 [.]	'1 ○ '4 '2
8	'3	○ '1 '2 '4
9	'3 ● 2 [.] 1 [.]	○ '4
10	'2 ●	○ '1 '3 '4
11	'1	○ 2 [.] 3 [.] 4 [.]
12	'2	○ 1 [.] 3 [.] 4 [.]
13	'2 '1 3 [.]	○ 4 [.]
14	3 [.]	○ 1 [.] '2 4 [.]
15	'3	'4 ○ 2 [.]
16	'4 2 [.] 3 [.] 1 [.]	○
17	4 [.]	'2 ○ '1 '3
18	4 [.]	'1 ○ '2 3 [.]
19	'4	○ 1 [.] 3 [.]
20	'4	'2 '1 ○
21	'4 3 [.]	○ '1
22	'3 '4	○ 2 [.]
23	'3 [.] '4	○
24	'2	○ '1 '3 '4
25	'1	○ '2 '3 '4
26	'2 '1	○ 2 [.] 1 [.] 3 [.] '4
27	'2 '1	○ 3 [.] '4
28	3 [.]	○ '2 1 [.] 4 [.]
29	'3	'1 ○ 2 [.] 4 [.]
30	'3 2 [.]	'1 ○ 4 [.]
31	'2	○ '1 '3 4 [.]

This Table represents, at 15^h 30^m after *Mean Noon* of each day of the Month, the relative position of the images of Jupiter and his Satellites, as they would appear (disregarding their latitude) an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page, the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the numeral is *on* the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding $e^{\circ} 176271$.	From Mean Noon of January 1.		
	Logarithm of						Days.	Day of the Year.	Fraction of the Year.
	A	B	C	D					
1	+0.5221	-1.3031	+9.5921	-0.9078	h m s 17 18 15.99	101	182	.498	
2	0.5603	1.3017	9.5963	0.9083	17 14 20.08	102	183	.501	
3	0.5954	1.3002	9.6004	0.9088	17 10 24.16	103	184	.504	
4	+0.6277	-1.2986	+9.6045	-0.9094	17 6 28.25	104	185	.507	
5	0.6577	1.2969	9.6086	0.9100	17 2 32.34	105	186	.509	
6	0.6856	1.2950	9.6126	0.9106	16 58 36.42	106	187	.512	
7	+0.7117	-1.2930	+9.6165	-0.9113	16 54 40.51	107	188	.515	
8	0.7362	1.2909	9.6204	0.9119	16 50 44.60	108	189	.517	
9	0.7593	1.2886	9.6243	0.9127	16 46 48.69	109	190	.520	
10	+0.7811	-1.2862	+9.6281	-0.9134	16 42 52.77	110	191	.523	
11	0.8018	1.2837	9.6318	0.9141	16 38 56.86	111	192	.526	
12	0.8214	1.2810	9.6355	0.9149	16 35 0.95	112	193	.528	
13	+0.8400	-1.2782	+9.6391	-0.9157	16 31 5.04	113	194	.531	
14	0.8578	1.2753	9.6427	0.9165	16 27 9.12	114	195	.534	
15	0.8747	1.2722	9.6463	0.9173	16 23 13.21	115	196	.537	
16	+0.8909	-1.2690	+9.6498	-0.9182	16 19 17.30	116	197	.539	
17	0.9064	1.2656	9.6532	0.9191	16 15 21.39	117	198	.542	
18	0.9213	1.2621	9.6566	0.9200	16 11 25.48	118	199	.545	
19	+0.9355	-1.2584	+9.6600	-0.9209	16 7 29.56	119	200	.548	
20	0.9492	1.2546	9.6633	0.9218	16 3 33.65	120	201	.550	
21	0.9623	1.2506	9.6666	0.9227	15 59 37.74	121	202	.553	
22	+0.9750	-1.2464	+9.6698	-0.9237	15 55 41.83	122	203	.556	
23	0.9871	1.2421	9.6730	0.9246	15 51 45.92	123	204	.559	
24	0.9989	1.2377	9.6761	0.9256	15 47 50.00	124	205	.561	
25	+1.0102	-1.2330	+9.6792	-0.9266	15 43 54.09	125	206	.564	
26	1.0211	1.2282	9.6822	0.9276	15 39 58.18	126	207	.567	
27	1.0316	1.2232	9.6852	0.9286	15 36 2.27	127	208	.569	
28	+1.0418	-1.2180	+9.6882	-0.9296	15 32 6.36	128	209	.572	
29	1.0516	1.2127	9.6911	0.9307	15 28 10.45	129	210	.575	
30	1.0611	1.2071	9.6939	0.9317	15 24 14.54	130	211	.578	
31	1.0702	1.2014	9.6968	0.9327	15 20 18.63	131	212	.580	
32	+1.0791	-1.1954	+9.6995	-0.9338	15 16 22.72	132	213	.583	

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sideral Time of the Semidiam. passing the Meridian.*	Equation of Time, to be added to subtr. from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Frid.	1	h m s	s	° ' "	"	m s	m s	"
Sat.	2	8 47 8.62	9.692	N.17 55 54.4	38.47	1 6.60	6 0.88	0.1
Sun.	3	8 51 1.22	9.666	17 40 31.1	39.19	1 6.51	5 56.94	0.1
Mon.	4	8 54 53.21	9.641	17 24 50.4	39.90	1 6.43	5 52.39	0.2
Tues.	5	8 58 44.59	9.615	17 8 52.8	40.60	1 6.34	5 47.23	0.2
Wed.	6	9 2 35.36	9.590	16 52 38.6	41.28	1 6.25	5 41.45	0.2
Thur.	7	9 6 25.52	9.564	16 36 8.0	41.95	1 6.17	5 35.07	0.2
Frid.	8	9 10 15.07	9.539	16 19 21.4	42.60	1 6.09	5 28.08	0.3
Sat.	9	9 14 4.01	9.514	16 2 19.1	43.24	1 6.00	5 20.49	0.3
Sun.	10	9 17 52.35	9.489	15 45 1.4	43.86	1 5.92	5 12.30	0.3
Mon.	11	9 21 40.09	9.465	15 27 28.7	44.48	1 5.83	5 3.51	0.3
Tues.	12	9 25 27.25	9.441	15 9 41.3	45.08	1 5.75	4 54.14	0.4
Wed.	13	9 29 13.83	9.418	14 51 39.3	45.67	1 5.67	4 44.19	0.4
Thur.	14	9 32 59.85	9.394	14 33 23.2	46.25	1 5.59	4 33.68	0.4
Frid.	15	9 36 45.31	9.372	14 14 53.3	46.81	1 5.51	4 22.61	0.4
Sat.	16	9 40 30.22	9.350	13 56 9.8	47.36	1 5.44	4 11.01	0.5
Sun.	17	9 44 14.61	9.329	13 37 13.1	47.90	1 5.36	3 58.88	0.5
Mon.	18	9 47 58.49	9.308	13 18 3.4	48.43	1 5.29	3 46.24	0.5
Tues.	19	9 51 41.87	9.288	12 58 41.1	48.95	1 5.21	3 33.09	0.5
Wed.	20	9 55 24.76	9.268	12 39 6.3	49.45	1 5.14	3 19.47	0.5
Thur.	21	9 59 7.18	9.249	12 19 19.5	49.95	1 5.07	3 5.37	0.6
Frid.	22	10 2 49.15	9.231	11 59 20.8	50.43	1 5.00	2 50.83	0.6
Sat.	23	10 6 30.69	9.213	11 39 10.6	50.89	1 4.93	2 35.84	0.6
Sun.	24	10 10 11.79	9.195	11 18 49.2	51.34	1 4.87	2 20.43	0.6
Mon.	25	10 13 52.48	9.179	10 58 17.0	51.78	1 4.81	2 4.62	0.6
Tues.	26	10 17 32.77	9.163	10 37 34.2	52.21	1 4.75	1 48.40	0.6
Wed.	27	10 21 12.68	9.148	10 16 41.1	52.63	1 4.69	1 31.79	0.7
Thur.	28	10 24 52.22	9.133	9 55 38.0	53.03	1 4.63	1 14.82	0.7
Frid.	29	10 28 31.40	9.118	9 34 25.4	53.41	1 4.58	0 57.49	0.7
Sat.	30	10 32 10.23	9.104	9 13 3.5	53.78	1 4.53	0 39.82	0.7
Sun.	31	10 35 48.72	9.091	8 51 32.7	54.14	1 4.48	0 21.81	0.7
Mon.	32	10 39 26.89	9.078	8 29 53.4	54.48	1 4.43	0 3.47	0.7
Mon.	32	10 43 4.76		N. 8 8 5.8		1 4.39	0 15.17	

Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sideral Time

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subd. from added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
Frid.	1	h m s 8 47 7.65	N. 17 55 58.2	15 47.9	m s 6 0.90	h m s 8 41 6.75
Sat.	2	8 51 0.26	17 40 34.9	15 48.0	5 56.96	8 45 3.30
Sun.	3	8 54 52.27	17 24 54.3	15 48.2	5 52.41	8 48 59.86
Mon.	4	8 58 43.66	17 8 56.8	15 48.3	5 47.25	8 52 56.42
Tues.	5	9 2 34.45	16 52 42.5	15 48.5	5 41.48	8 56 52.97
Wed.	6	9 6 24.63	16 36 11.9	15 48.6	5 35.10	9 0 49.53
Thur.	7	9 10 14.20	16 19 25.3	15 48.8	5 28.11	9 4 46.09
Frid.	8	9 14 3.17	16 2 22.9	15 49.0	5 20.53	9 8 42.64
Sat.	9	9 17 51.53	15 45 5.2	15 49.1	5 12.33	9 12 39.20
Sun.	10	9 21 39.29	15 27 32.5	15 49.3	5 3.54	9 16 35.75
Mon.	11	9 25 26.48	15 9 44.9	15 49.4	4 54.17	9 20 32.31
Tues.	12	9 29 13.09	14 51 42.9	15 49.6	4 44.22	9 24 28.87
Wed.	13	9 32 59.13	14 33 26.7	15 49.8	4 33.71	9 28 25.42
Thur.	14	9 36 44.62	14 14 56.7	15 50.0	4 22.64	9 32 21.98
Frid.	15	9 40 29.57	13 56 13.1	15 50.2	4 11.04	9 36 18.53
Sat.	16	9 44 14.00	13 37 16.3	15 50.4	3 58.91	9 40 15.09
Sun.	17	9 47 57.91	13 18 6.5	15 50.6	3 46.27	9 44 11.64
Mon.	18	9 51 41.32	12 58 44.0	15 50.7	3 33.12	9 48 8.20
Tues.	19	9 55 24.25	12 39 9.0	15 50.9	3 19.50	9 52 4.75
Wed.	20	9 59 6.71	12 19 22.0	15 51.1	3 5.40	9 56 1.31
Thur.	21	10 2 48.72	11 59 23.2	15 51.3	2 50.86	9 59 57.86
Frid.	22	10 6 30.29	11 39 12.8	15 51.5	2 35.87	10 3 54.42
Sat.	23	10 10 11.43	11 18 51.2	15 51.7	2 20.46	10 7 50.98
Sun.	24	10 13 52.17	10 58 18.8	15 51.9	2 4.64	10 11 47.53
Mon.	25	10 17 32.50	10 37 35.7	15 52.1	1 48.42	10
Tues.	26	10 21 12.45	10 16 42.4	15 52.3	1 31.81	
Wed.	27	10 24 52.03	9 55 39.1	15 52.5	1 14.84	
Thur.	28	10 28 31.25	9 34 26.2	15 52.7	0 57.56	
Frid.	29	10 32 10.13	9 13 4.1	15 53.0	0 39.8	
Sat.	30	10 35 48.67	8 51 33.0	15 53.2	0 21.1	
Sun.	31	10 39 26.89	8 29 53.4	15 53.4	0 3.	
Mon.	32	10 43 4.79	N. 8 8 5.6	15 53.7	0 15.	

* The Semidiameter for Apparent Noon may be assumed the same as th

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Midnight.</i>	<i>Noon.</i>	<i>Midnight.</i>
1	129 20 25.5	N.0.49	0.0063284	15 4.9	15 1.3	55 20.8	55 7.6
2	130 17 53.5	0.42	0.0062675	14 58.0	14 54.9	54 55.3	54 44.0
3	131 15 22.4	0.33	0.0062040	14 52.2	14 49.8	54 33.9	54 25.5
4	132 12 52.2	0.22	0.0061382	14 47.9	14 46.4	54 18.2	54 12.9
5	133 10 22.9	N.0.11	0.0060702	14 45.5	14 45.2	54 9.6	54 8.4
6	134 7 54.4	S.0.02	0.0060001	14 45.5	14 46.4	54 9.4	54 12.8
7	135 5 26.8	0.15	0.0059281	14 48.0	14 50.2	54 18.6	54 26.5
8	136 3 0.0	0.27	0.0058541	14 53.2	14 56.8	54 37.7	54 51.4
9	137 0 34.0	0.38	0.0057784	15 1.1	15 6.0	55 6.8	55 24.1
10	137 58 8.9	0.47	0.0057011	15 11.5	15 17.6	55 45.1	56 7.1
11	138 55 44.7	0.54	0.0056224	15 24.1	15 31.0	56 31.2	56 56.1
12	139 53 21.5	0.58	0.0055424	15 38.1	15 45.4	57 22.7	57 49.1
13	140 50 59.4	0.59	0.0054611	15 52.6	15 59.7	58 15.8	58 41.1
14	141 48 38.4	0.57	0.0053787	16 6.4	16 12.6	59 6.3	59 29.1
15	142 46 18.6	0.52	0.0052955	16 18.1	16 22.8	59 49.3	60 6.1
16	143 44 0.1	0.44	0.0052113	16 26.6	16 29.4	60 20.6	60 30.8
17	144 41 42.9	0.33	0.0051261	16 31.1	16 31.7	60 37.1	60 39.4
18	145 39 27.2	0.21	0.0050399	16 31.3	16 29.8	60 37.7	60 32.2
19	146 37 13.1	S.0.08	0.0049528	16 27.4	16 24.1	60 23.4	60 11.4
20	147 35 0.5	N.0.05	0.0048646	16 20.1	16 15.6	59 56.9	59 40.3
21	148 32 49.7	0.19	0.0047755	16 10.7	16 5.4	59 22.1	59 2.8
22	149 30 40.7	0.32	0.0046852	15 59.9	15 54.4	58 42.7	58 22.5
23	150 28 33.4	0.43	0.0045936	15 48.8	15 43.3	58 1.9	57 41.8
24	151 26 27.9	0.51	0.0045006	15 38.0	15 32.8	57 22.2	57 3.2
25	152 24 24.2	0.58	0.0044062	15 27.8	15 23.1	56 44.9	56 27.4
26	153 22 22.3	0.61	0.0043102	15 18.6	15 14.3	56 10.9	55 55.2
27	154 20 22.4	0.62	0.0042124	15 10.2	15 6.4	55 40.3	55 26.4
28	155 18 24.2	0.59	0.0041130	15 2.9	14 59.5	55 13.3	55 1.1
29	156 16 27.8	0.53	0.0040118	14 56.5	14 53.7	54 49.9	54 39.6
30	157 14 33.1	0.45	0.0039089	14 51.2	14 48.9	54 30.3	54 22.1
31	158 12 40.1	0.35	0.0038042	14 47.0	14 45.4	54 15.0	54 9.4
32	159 10 48.8	N.0.23	0.0036979	14 44.2	14 43.4	54 4.7	54 1.2

MEAN TIME.

Day of the Week. Day of the Month.		THE MOON'S																				
		Longitude.				Latitude.				Age.	Meridian											
		Noon.		Midnight.		Noon.		Midnight.		Noon.	Passage.											
		°	'	°	'	°	'	°	'	°	'	d	h	m								
Frid.	1	136	31	17	9	142	43	58	4	N. 4	25	25	1	N. 4	8	10	0	0	6	0	41	8
Sat.	2	148	53	19	5	154	59	29	8	3	48	7	7	3	25	36	1	1	6	1	27	1
Sun.	3	161	2	42	3	167	3	13	6	3	0	53	0	2	34	17	3	2	6	2	9	3
Mon.	4	173	1	23	9	178	57	37	2	2	6	7	2	1	36	41	1	3	6	2	49	3
Tues.	5	184	52	21	6	190	46	7	0	1	6	17	1	N. 0	35	13	0	4	6	3	28	2
Wed.	6	196	39	26	9	202	32	56	9	N. 0	3	46	8	S. 0	27	44	5	5	6	4	7	2
Thur.	7	208	27	14	9	214	22	59	9	S. 0	59	3	6	1	29	52	9	6	6	4	47	5
Frid.	8	220	20	51	9	226	21	31	5	1	59	54	9	2	28	51	5	7	6	5	30	1
Sat.	9	232	25	39	0	238	33	53	3	2	56	23	8	3	22	12	7	8	6	6	16	2
Sun.	10	244	46	51	6	251	5	8	0	3	45	58	3	4	7	19	4	9	6	7	6	5
Mon.	11	257	29	13	0	263	59	31	6	4	25	54	9	4	41	22	8	10	6	8	1	3
Tues.	12	270	36	21	6	277	19	54	2	4	53	22	0	5	1	31	7	11	6	8	59	6
Wed.	13	284	10	10	8	291	7	4	0	5	5	33	2	5	5	10	0	12	6	9	59	6
Thur.	14	298	10	15	0	305	19	15	3	5	0	9	9	4	50	26	2	13	6	10	59	2
Frid.	15	312	33	26	2	319	52	0	3	4	35	57	2	4	16	48	9	14	6	11	56	4
Sat.	16	327	14	2	6	334	38	33	8	3	53	15	0	3	25	35	8	15	6	12	50	7
Sun.	17	342	4	31	1	349	30	52	7	2	54	20	2	2	20	2	4	16	6	13	42	5
Mon.	18	356	56	39	1	4	20	55	5	1	43	21	3	S. 1	4	59	9	17	6	14	32	7
Tues.	19	11	42	53	8	19	1	53	2	S. 0	25	42	8	N. 0	13	46	7	18	6	15	22	7
Wed.	20	26	17	21	0	33	28	53	0	N. 0	52	45	2	1	30	33	5	19	6	16	13	7
Thur.	21	40	36	12	0	47	39	7	8	2	6	35	5	2	40	19	1	20	6	17	6	7
Frid.	22	54	37	36	1	61	31	36	9	3	11	17	6	3	39	7	9	21	6	18	2	1
Sat.	23	68	21	15	3	75	6	36	9	4	3	31	8	4	24	15	6	22	6	18	59	5
Sun.	24	81	47	50	5	88	25	5	7	4	41	9	1	4	54	5	7	23	6	19	57	5
Mon.	25	94	58	32	6	101	28	20	8	5	3	2	4	5	7	59	2	24	6	20	54	2
Tues.	26	107	54	40	1	114	17	39	1	5	8	58	7	5	6	6	0	25	6	21	47	9
Wed.	27	120	37	26	4	126	54	9	6	4	59	29	2	4	49	18	0	26	6	22	37	8
Thur.	28	133	7	56	0	139	18	52	6	4	35	43	7	4	19	0	5	27	6	23	23	9
Frid.	29	145	27	7	1	151	32	47	4	3	59	23	4	3	37	8	4	28	6	♂		
Sat.	30	157	36	2	5	163	37	2	5	3	12	33	1	2	45	55	7	0	0	0	6	8
Sun.	31	169	35	59	9	175	33	8	4	2	17	35	1	1	47	50	4	1	0	0	47	3
Mon.	32	181	28	44	0	187	23	5	6	N. 1	17	0	7	N. 0	45	25	2	2	0	1	26	4

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Dif. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>FRIDAY 1.</i>				<i>SUNDAY 3.</i>			
0	9 21 34.82	N.20 6 47.1	108.61	0	10 54 42.09	N.10 13 2.6	I
1	9 23 38.98	19 55 55.4	109.43	1	10 56 31.72	9 59 31.7	I
2	9 25 42.78	19 44 58.8	110.24	2	10 58 21.13	9 45 59.1	I
3	9 27 46.20	19 33 57.4	111.04	3	11 0 10.34	9 32 24.7	I
4	9 29 49.25	19 22 51.1	111.83	4	11 1 59.34	9 18 48.5	I
5	9 31 51.93	19 11 40.1	112.60	5	11 3 48.15	9 5 10.8	I
6	9 33 54.26	19 0 24.5	113.36	6	11 5 36.75	8 51 31.4	I
7	9 35 56.22	18 49 4.4	114.11	7	11 7 25.16	8 37 50.5	I
8	9 37 57.82	18 37 39.7	114.85	8	11 9 13.39	8 24 8.1	I
9	9 39 59.07	18 26 10.6	115.57	9	11 11 1.44	8 10 24.2	I
10	9 41 59.96	18 14 37.2	116.28	10	11 12 49.30	7 56 39.0	I
11	9 44 0.50	18 2 59.5	116.98	11	11 14 36.99	7 42 52.4	I
12	9 46 0.68	17 51 17.6	117.67	12	11 16 24.51	7 29 4.5	I
13	9 48 0.52	17 39 31.6	118.35	13	11 18 11.87	7 15 15.4	I
14	9 50 0.02	17 27 41.5	119.01	14	11 19 59.06	7 1 25.1	I
15	9 51 59.18	17 15 47.4	119.66	15	11 21 46.09	6 47 33.6	I
16	9 53 58.00	17 3 49.4	120.30	16	11 23 32.98	6 33 41.0	I
17	9 55 56.49	16 51 47.6	120.93	17	11 25 19.71	6 19 47.4	I
18	9 57 54.64	16 39 42.0	121.55	18	11 27 6.29	6 5 52.8	I
19	9 59 52.47	16 27 32.7	122.16	19	11 28 52.74	5 51 57.2	I
20	10 1 49.97	16 15 19.7	122.75	20	11 30 39.05	5 38 0.8	I
21	10 3 47.15	16 3 3.2	123.34	21	11 32 25.23	5 24 3.5	I
22	10 5 44.01	15 50 43.2	123.91	22	11 34 11.29	5 10 5.3	I
23	10 7 40.55	N.15 38 19.7	124.47	23	11 35 57.22	N. 4 56 6.4	I
<i>SATURDAY 2.</i>				<i>MONDAY 4.</i>			
0	10 9 36.78	N.15 25 52.9	125.02	0	11 37 43.03	N. 4 42 6.8	I
1	10 11 32.70	15 13 22.8	125.56	1	11 39 28.72	4 28 6.5	I
2	10 13 28.32	15 0 49.4	126.09	2	11 41 14.31	4 14 5.6	I
3	10 15 23.64	14 48 12.9	126.61	3	11 42 59.79	4 0 4.1	I
4	10 17 18.65	14 35 33.3	127.11	4	11 44 45.17	3 46 2.0	I
5	10 19 13.37	14 22 50.6	127.61	5	11 46 30.45	3 31 59.5	I
6	10 21 7.80	14 10 4.9	128.10	6	11 48 15.64	3 17 56.5	I
7	10 23 1.94	13 57 16.3	128.57	7	11 50 0.75	3 3 53.1	I
8	10 24 55.80	13 44 24.9	129.04	8	11 51 45.77	2 49 49.4	I
9	10 26 49.38	13 31 30.7	129.49	9	11 53 30.71	2 35 45.3	I
10	10 28 42.68	13 18 33.7	129.94	10	11 55 15.58	2 21 40.9	I
11	10 30 35.71	13 5 34.1	130.37	11	11 57 0.38	2 7 36.3	I
12	10 32 28.48	12 52 31.8	130.80	12	11 58 45.11	1 53 31.5	I
13	10 34 20.98	12 39 27.0	131.22	13	12 0 29.78	1 39 26.6	I
14	10 36 13.21	12 26 19.7	131.62	14	12 2 14.40	1 25 21.5	I
15	10 38 5.19	12 13 10.0	132.02	15	12 3 58.97	1 11 16.4	I
16	10 39 56.92	11 59 57.9	132.40	16	12 5 43.49	0 57 11.2	I
17	10 41 48.40	11 46 43.5	132.78	17	12 7 27.96	0 43 6.1	I
18	10 43 39.63	11 33 26.8	133.14	18	12 9 12.39	0 29 1.0	I
19	10 45 30.62	11 20 7.9	133.50	19	12 10 56.79	0 14 56.0	I
20	10 47 21.37	11 6 46.9	133.85	20	12 12 41.16	N. 0 0 51.2	I
21	10 49 11.89	10 53 23.8	134.19	21	12 14 25.50	S. 0 13 13.5	I
22	10 51 2.18	10 39 58.7	134.52	22	12 16 9.82	0 27 17.9	I
23	10 52 52.24	10 26 31.6	134.84	23	12 17 54.13	0 41 22.0	I
24	10 54 42.09	N.10 13 2.6		24	12 19 38.42	S. 0 55 25.9	I

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

hr.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>TUESDAY 5.</i>				<i>THURSDAY 7.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	12 19 38.42	S. 0 55 25.9	140.58	0	13 44 17.87	S. 11 51 13.7	129.78
1	12 21 22.70	1 9 29.4	140.52	1	13 46 7.05	12 4 12.4	129.38
2	12 23 6.99	1 23 32.5	140.45	2	13 47 56.45	12 17 8.7	128.97
3	12 24 51.27	1 37 35.2	140.37	3	13 49 46.06	12 30 2.5	128.56
4	12 26 35.56	1 51 37.4	140.28	4	13 51 35.89	12 42 53.9	128.13
5	12 28 19.86	2 5 39.1	140.19	5	13 53 25.95	12 55 42.7	127.70
6	12 30 4.17	2 19 40.3	140.09	6	13 55 16.23	13 8 28.9	127.26
7	12 31 48.50	2 33 40.9	139.99	7	13 57 6.75	13 21 12.4	126.81
8	12 33 32.85	2 47 40.8	139.88	8	13 58 57.51	13 33 53.3	126.35
9	12 35 17.24	3 1 40.1	139.76	9	14 0 48.51	13 46 31.4	125.89
10	12 37 1.65	3 15 38.6	139.63	10	14 2 39.76	13 59 6.7	125.41
11	12 38 46.10	3 29 36.4	139.50	11	14 4 31.25	14 11 39.2	124.93
12	12 40 30.59	3 43 33.4	139.36	12	14 6 23.01	14 24 8.8	124.44
13	12 42 15.13	3 57 29.6	139.21	13	14 8 15.02	14 36 35.5	123.94
14	12 43 59.72	4 11 24.8	139.06	14	14 10 7.30	14 48 59.1	123.44
15	12 45 44.37	4 25 19.2	138.90	15	14 11 59.84	15 1 19.7	122.92
16	12 47 29.07	4 39 12.6	138.74	16	14 13 52.65	15 13 37.2	122.39
17	12 49 13.84	4 53 5.0	138.56	17	14 15 45.74	15 25 51.6	121.86
18	12 50 58.68	5 6 56.4	138.38	18	14 17 39.11	15 38 2.7	121.32
19	12 52 43.59	5 20 46.7	138.20	19	14 19 32.77	15 50 10.6	120.76
20	12 54 28.58	5 34 35.9	138.01	20	14 21 26.71	16 2 15.2	120.20
21	12 56 13.65	5 48 24.0	137.81	21	14 23 20.95	16 14 16.4	119.63
22	12 57 58.81	6 2 10.9	137.60	22	14 25 15.48	16 26 14.2	119.05
23	12 59 44.05	S. 6 15 56.5	137.39	23	14 27 10.31	S. 16 38 8.5	118.46
<i>WEDNESDAY 6.</i>				<i>FRIDAY 8.</i>			
0	13 1 29.39	S. 6 29 40.8	137.17	0	14 29 5.45	S. 16 49 59.3	117.86
1	13 3 14.83	6 43 23.8	136.94	1	14 31 0.90	17 1 46.5	117.25
2	13 5 0.38	6 57 5.5	136.71	2	14 32 56.66	17 13 30.0	116.64
3	13 6 46.03	7 10 45.8	136.47	3	14 34 52.74	17 25 9.8	116.01
4	13 8 31.80	7 24 24.6	136.23	4	14 36 49.13	17 36 45.9	115.37
5	13 10 17.68	7 38 2.0	135.97	5	14 38 45.85	17 48 18.1	114.72
6	13 12 3.69	7 51 37.8	135.71	6	14 40 42.90	17 59 46.5	114.07
7	13 13 49.82	8 5 12.1	135.44	7	14 42 40.28	18 11 10.9	113.40
8	13 15 36.09	8 18 44.8	135.17	8	14 44 38.00	18 22 31.3	112.72
9	13 17 22.49	8 32 15.8	134.89	9	14 46 36.06	18 33 47.6	112.03
10	13 19 9.03	8 45 45.1	134.60	10	14 48 34.46	18 44 59.8	111.33
11	13 20 55.72	8 59 12.7	134.30	11	14 50 33.20	18 56 7.7	110.63
12	13 22 42.55	9 12 38.5	134.00	12	14 52 32.29	19 7	
13	13 24 29.54	9 26 2.5	133.69	13	14 54 31.74	19 18	
14	13 26 16.69	9 39 24.6	133.37	14	14 56 31.54	19	
15	13 28 4.00	9 52 44.8	133.04	15	14 58 31.71	19	
16	13 29 51.48	10 6 3.1	132.71	16	15 0 32.24	19	
17	13 31 39.13	10 19 19.4	132.37	17	15 2 33.13	20	
18	13 33 26.95	10 32 33.6	132.02	18	15 4 34.40	2	
19	13 35 14.96	10 45 45.8	131.67	19	15 6 36.03	2	
20	13 37 3.16	10 58 55.8	131.31	20	15 8 38.05	2	
21	13 38 51.54	11 12 3.6	130.94	21	15 10 40.44		
22	13 40 40.12	11 25 9.3	130.56	22	15 12 43.21		
23	13 42 28.89	11 38 12.6	130.17	23	15 14 46.37		
24	13 44 17.87	S. 11 51 13.7		24	15 16 49.91	S.	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SATURDAY 9.</i>				<i>MONDAY 11.</i>			
0	h m s	S. ° ' "	"	0	h m s	S. ° ' "	"
1	15 16 49.91	21 14 1.6	100.43	1	17 3 43.97	27 16 58.4	44.63
2	15 18 53.84	21 24 4.2	99.56	2	17 6 7.62	27 21 26.3	43.77
3	15 20 58.17	21 34 1.5	98.68	3	17 8 31.64	27 25 45.4	41.68
4	15 23 2.89	21 43 53.6	97.80	4	17 10 56.04	27 29 55.4	40.17
5	15 25 8.01	21 53 40.4	96.90	5	17 13 20.80	27 33 56.5	38.63
6	15 27 13.53	22 3 21.8	95.99	6	17 15 45.92	27 37 48.4	37.12
7	15 29 19.45	22 12 57.7	95.06	7	17 18 11.40	27 41 31.2	35.58
8	15 31 25.77	22 22 28.1	94.13	8	17 20 37.22	27 45 4.7	34.03
9	15 33 32.50	22 31 52.9	93.18	9	17 23 3.40	27 48 28.8	32.47
10	15 35 39.64	22 41 11.9	92.22	10	17 25 29.92	27 51 43.6	30.89
11	15 37 47.19	22 50 25.3	91.25	11	17 27 56.78	27 54 49.0	29.30
12	15 39 55.15	22 59 32.7	90.26	12	17 30 23.96	27 57 44.8	27.70
13	15 42 3.53	23 8 34.3	89.26	13	17 32 51.47	28 0 31.0	26.09
14	15 44 12.32	23 17 29.9	88.25	14	17 35 19.30	28 3 7.6	24.47
15	15 46 21.52	23 26 19.4	87.23	15	17 37 47.44	28 5 34.4	22.84
16	15 48 31.15	23 35 2.8	86.19	16	17 40 15.89	28 7 51.5	21.20
17	15 50 41.19	23 43 40.0	85.15	17	17 42 44.64	28 9 58.7	19.55
18	15 52 51.65	23 52 10.9	84.09	18	17 45 13.69	28 11 55.9	17.89
19	15 55 2.54	24 0 35.4	83.01	19	17 47 43.02	28 13 43.3	16.21
20	15 57 13.84	24 8 53.5	81.92	20	17 50 12.63	28 15 20.5	14.53
21	15 59 25.57	24 17 5.0	80.82	21	17 52 42.52	28 16 47.7	12.84
22	16 1 37.72	24 25 10.0	79.71	22	17 55 12.67	28 18 4.8	11.14
23	16 3 50.29	24 33 8.2	78.58	23	17 57 43.08	28 19 11.6	9.43
24	16 6 3.29	S. 24 40 59.7	77.44	24	18 0 13.75	S. 28 20 8.2	7.71
<i>SUNDAY 10.</i>				<i>TUESDAY 12.</i>			
0	h m s	S. ° ' "	"	0	h m s	S. ° ' "	"
1	16 8 16.71	24 48 44.4	76.29	1	18 2 44.66	28 20 54.5	5.98
2	16 10 30.56	24 56 22.2	75.12	2	18 5 15.81	28 21 30.4	4.15
3	16 12 44.83	25 3 52.9	73.94	3	18 7 47.19	28 21 55.9	2.31
4	16 14 59.52	25 11 16.6	72.75	4	18 10 18.79	28 22 11.0	0.56
5	16 17 14.64	25 18 33.1	71.55	5	18 12 50.61	28 22 15.5	1.00
6	16 19 30.18	25 25 42.4	70.33	6	18 15 22.63	28 22 9.5	2.76
7	16 21 46.14	25 32 44.4	69.10	7	18 17 54.85	28 21 53.0	4.51
8	16 24 2.52	25 39 38.9	67.85	8	18 20 27.26	28 21 25.8	6.31
9	16 26 19.33	25 46 26.0	66.59	9	18 22 59.85	28 20 47.9	8.09
10	16 28 36.55	25 53 5.6	65.32	10	18 25 32.61	28 19 59.4	9.88
11	16 30 54.19	25 59 37.5	64.03	11	18 28 5.54	28 19 0.1	11.67
12	16 33 12.25	26 6 1.7	62.73	12	18 30 38.62	28 17 50.0	13.47
13	16 35 30.73	26 12 18.1	61.42	13	18 33 11.85	28 16 29.2	15.28
14	16 37 49.62	26 18 26.7	60.10	14	18 35 45.22	28 14 57.5	17.09
15	16 40 8.92	26 24 27.2	58.76	15	18 38 18.72	28 13 15.0	18.90
16	16 42 28.62	26 30 19.8	57.41	16	18 40 52.34	28 11 21.6	20.72
17	16 44 48.74	26 36 4.3	56.04	17	18 43 26.07	28 9 17.3	22.54
18	16 47 9.26	26 41 40.5	54.65	18	18 45 59.91	28 7 2.0	24.36
19	16 49 30.18	26 47 8.5	53.27	19	18 48 33.84	28 4 35.9	26.19
20	16 51 51.50	26 52 28.1	51.87	20	18 51 7.86	28 1 58.7	28.02
21	16 54 13.22	26 57 39.3	50.45	21	18 53 41.96	27 59 10.6	29.85
22	16 56 35.32	27 2 42.1	49.02	22	18 56 16.13	27 56 11.5	31.68
23	16 58 57.82	27 7 36.2	47.58	23	18 58 50.35	27 53 1.4	33.52
24	17 1 20.70	27 12 21.7	46.12	24	19 1 24.62	27 49 40.3	35.35
25	17 3 43.97	S. 27 16 58.4		25	19 3 58.94	S. 27 46 8.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>WEDNESDAY 13.</i>				<i>FRIDAY 15.</i>		
h m s	° ' "	"		h m s	° ' "	"
3 58.94	S.27 46 8.2	37.19	0	21 5 39.98	S.21 27 39.2	119.06
6 33.29	27 42 25.0	39.03	1	21 8 7.28	21 15 44.8	120.50
9 7.67	27 38 30.9	40.87	2	21 10 34.31	21 3 41.8	121.93
11 42.06	27 34 25.7	42.70	3	21 13 1.07	20 51 30.2	123.34
14 16.46	27 30 9.5	44.54	4	21 15 27.56	20 39 10.2	124.73
16 50.85	27 25 42.2	46.37	5	21 17 53.77	20 26 41.8	126.11
19 25.23	27 21 4.0	48.20	6	21 20 19.71	20 14 5.2	127.47
21 59.60	27 16 14.8	50.03	7	21 22 45.37	20 1 20.3	128.82
24 33.94	27 11 14.6	51.86	8	21 25 10.76	19 48 27.4	130.15
27 8.24	27 6 3.4	53.69	9	21 27 35.86	19 35 26.6	131.46
29 42.49	27 0 41.3	55.51	10	21 30 0.69	19 22 17.8	132.75
32 16.70	26 55 8.2	57.33	11	21 32 25.24	19 9 1.3	134.03
34 50.84	26 49 24.2	59.15	12	21 34 49.50	18 55 37.1	135.29
37 24.91	26 43 29.3	60.96	13	21 37 13.48	18 42 5.4	136.53
39 58.90	26 37 23.5	62.77	14	21 39 37.18	18 28 26.2	137.76
42 32.81	26 31 6.9	64.57	15	21 42 0.59	18 14 39.6	138.97
45 6.63	26 24 39.5	66.36	16	21 44 23.73	18 0 45.8	140.16
47 40.34	26 18 1.3	68.15	17	21 46 46.58	17 46 44.8	141.33
50 13.94	26 11 12.4	69.94	18	21 49 9.16	17 32 36.8	142.49
52 47.43	26 4 12.7	71.72	19	21 51 31.45	17 18 21.9	143.63
55 20.80	25 57 2.4	73.49	20	21 53 53.46	17 4 0.1	144.74
57 54.03	25 49 41.5	75.25	21	21 56 15.20	16 49 31.7	145.84
0 27.13	25 42 9.9	77.01	22	21 58 36.65	16 34 56.6	146.93
3 0.09	S.25 34 27.9	78.76	23	22 0 57.83	S.16 20 15.0	147.99
<i>THURSDAY 14.</i>				<i>SATURDAY 16.</i>		
5 32.89	S.25 26 35.3	80.50	0	22 3 18.74	S.16 5 27.1	149.04
8 5.54	25 18 32.3	82.24	1	22 5 39.37	15 50 32.9	150.06
10 38.02	25 10 18.9	83.96	2	22 7 59.73	15 35 32.5	151.07
13 10.33	25 1 55.1	85.67	3	22 10 19.82	15 20 26.0	152.06
15 42.46	24 53 21.1	87.38	4	22 12 39.64	15 5 13.7	153.03
18 14.41	24 44 36.8	89.07	5	22 14 59.19	14 49 55.5	153.98
20 46.17	24 35 42.3	90.76	6	22 17 18.48	14 34 31.6	154.91
23 17.74	24 26 37.8	92.44	7	22 19 37.51	14 19 2.2	155.82
25 49.11	24 17 23.1	94.10	8	22 21 56.28	14 3 27.2	156.71
28 20.27	24 7 58.5	95.75	9	22 24 14.79	13 47 46.9	157.59
30 51.22	23 58 24.0	97.40	10	22 26 33.04	13 32 1.4	158.44
33 21.96	23 48 39.6	99.03	11	22 28 51.04	13 16 10.8	159.28
35 52.47	23 38 45.4	100.65	12	22 31 8.79	13 0 15.1	160.09
38 22.76	23 28 41.5	102.26	13	22 33 26.29	12 44 14.6	160.88
40 52.82	23 18 27.9	103.85	14	22 35 43.55	12 28 9.3	161.66
43 22.65	23 8 4.8	105.43	15	22 38 0.57	12 11 59.3	16
45 52.24	22 57 32.2	107.00	16	22 40 17.35	11 55 44.8	
48 21.59	22 46 50.2	108.56	17	22 42 33.89	11 39 25.0	
50 50.69	22 35 58.8	110.10	18	22 44 50.21	11 23 2	
53 19.55	22 24 58.2	111.63	19	22 47 6.29	11 6 35	
55 48.15	22 13 48.4	113.15	20	22 49 22.15	10 50	
58 16.50	22 2 29.5	114.65	21	22 51 37.80	10 33	
0 44.59	21 51 1.7	116.13	22	22 53 53.22	10 16	
3 12.42	21 39 24.9	117.60	23	22 56 8.43	10 0	
5 39.98	S.21 27 39.2		24	22 58 23.43	S. 9 43	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.
<i>SUNDAY 17.</i>						
	h m s	° ' "	"		h m s	° ' "
0	22 58 23.43	S. 9 43 19.7	168.34	0	0 43 45.17	N. 4 14 31.6
1	23 0 38.23	9 26 29.7	168.90	1	0 45 55.56	4 31 53.5
2	23 2 52.82	9 9 36.3	169.44	2	0 48 5.99	4 49 13.5
3	23 5 7.22	8 52 39.6	169.96	3	0 50 16.45	5 6 31.2
4	23 7 21.43	8 35 39.8	170.46	4	0 52 26.95	5 23 46.8
5	23 9 35.45	8 18 37.1	170.94	5	0 54 37.50	5 41 0.0
6	23 11 49.28	8 1 31.4	171.41	6	0 56 48.09	5 58 10.7
7	23 14 2.93	7 44 22.9	171.85	7	0 58 58.74	6 15 18.9
8	23 16 16.41	7 27 11.8	172.27	8	1 1 9.45	6 32 24.5
9	23 18 29.71	7 9 58.2	172.68	9	1 3 20.23	6 49 27.3
10	23 20 42.84	6 52 42.1	173.06	10	1 5 31.08	7 6 27.2
11	23 22 55.81	6 35 23.7	173.43	11	1 7 42.00	7 23 24.2
12	23 25 8.62	6 18 3.1	173.78	12	1 9 52.99	7 40 18.1
13	23 27 21.28	6 0 40.4	174.10	13	1 12 4.07	7 57 8.8
14	23 29 33.79	5 43 15.8	174.41	14	1 14 15.24	8 13 56.3
15	23 31 46.15	5 25 49.4	174.70	15	1 16 26.51	8 30 40.4
16	23 33 58.38	5 8 21.2	174.97	16	1 18 37.87	8 47 21.1
17	23 36 10.47	4 50 51.4	175.22	17	1 20 49.33	9 3 58.2
18	23 38 22.43	4 33 20.1	175.44	18	1 23 0.90	9 20 31.7
19	23 40 34.26	4 15 47.4	175.65	19	1 25 12.58	9 37 1.4
20	23 42 45.97	3 58 13.5	175.85	20	1 27 24.38	9 53 27.2
21	23 44 57.56	3 40 38.4	176.02	21	1 29 36.30	10 9 49.1
22	23 47 9.05	3 23 2.3	176.17	22	1 31 48.34	10 26 7.0
23	23 49 20.43	S. 3 5 25.3	176.31	23	1 34 0.50	N.10 42 20.8
<i>MONDAY 18.</i>						
	h m s	° ' "	"		h m s	° ' "
0	23 51 31.70	S. 2 47 47.4	176.42	0	1 36 12.80	N.10 58 30.3
1	23 53 42.88	2 30 8.9	176.52	1	1 38 25.24	11 14 35.5
2	23 55 53.97	2 12 29.8	176.60	2	1 40 37.82	11 30 36.3
3	23 58 4.98	1 54 50.2	176.65	3	1 42 50.54	11 46 32.6
4	0 0 15.90	1 37 10.3	176.69	4	1 45 3.41	12 2 24.3
5	0 2 26.75	1 19 30.1	176.71	5	1 47 16.43	12 18 11.3
6	0 4 37.52	1 1 49.8	176.72	6	1 49 29.61	12 33 53.5
7	0 6 48.23	0 44 9.5	176.70	7	1 51 42.95	12 49 30.8
8	0 8 58.88	0 26 29.3	176.67	8	1 53 56.45	13 5 3.1
9	0 11 9.47	S. 0 8 49.3	176.61	9	1 56 10.12	13 20 30.4
10	0 13 20.01	N. 0 8 50.4	176.54	10	1 58 23.96	13 35 52.5
11	0 15 30.51	0 26 29.7	176.45	11	2 0 37.97	13 51 9.4
12	0 17 40.97	0 44 8.4	176.34	12	2 2 52.16	14 6 20.9
13	0 19 51.39	1 1 46.5	176.22	13	2 5 6.53	14 21 27.0
14	0 22 1.79	1 19 23.8	176.07	14	2 7 21.08	14 36 27.6
15	0 24 12.16	1 37 0.2	175.91	15	2 9 35.83	14 51 22.6
16	0 26 22.50	1 54 35.7	175.73	16	2 11 50.76	15 6 11.8
17	0 28 32.84	2 12 10.1	175.53	17	2 14 5.88	15 20 55.3
18	0 30 43.16	2 29 43.3	175.32	18	2 16 21.20	15 35 33.0
19	0 32 53.48	2 47 15.2	175.08	19	2 18 36.72	15 50 4.6
20	0 35 3.80	3 4 45.7	174.83	20	2 20 52.44	16 4 30.2
21	0 37 14.12	3 22 14.7	174.56	21	2 23 8.37	16 18 49.7
22	0 39 24.46	3 39 42.1	174.28	22	2 25 24.50	16 33 3.0
23	0 41 34.81	3 57 7.7	173.98	23	2 27 40.84	16 47 9.9
24	0 43 45.17	N. 4 14 31.6		24	2 29 57.39	N.17 1 10.5
<i>TUESDAY 19.</i>						
<i>WEDNESDAY 20.</i>						

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
<i>THURSDAY 21.</i>				<i>SATURDAY 23.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	2 29 57.39	N.17 1 10.5	139.01	0	4 23 34.66	N.25 43 28.3	72.99
1	2 32 14.15	17 15 4.6	137.92	1	4 26 1.76	25 50 46.2	71.37
2	2 34 31.13	17 28 52.1	136.82	2	4 28 29.01	25 57 54.5	69.75
3	2 36 48.33	17 42 33.0	135.70	3	4 30 56.43	26 4 53.0	68.12
4	2 39 5.74	17 56 7.2	134.56	4	4 33 23.99	26 11 41.7	66.49
5	2 41 23.38	18 9 34.6	133.41	5	4 35 51.69	26 18 20.7	64.85
6	2 43 41.24	18 22 55.1	132.25	6	4 38 19.54	26 24 49.8	63.20
7	2 45 59.32	18 36 8.6	131.08	7	4 40 47.52	26 31 9.0	61.55
8	2 48 17.63	18 49 15.1	129.89	8	4 43 15.63	26 37 18.4	59.90
9	2 50 36.17	19 2 14.5	128.69	9	4 45 43.86	26 43 17.8	58.24
10	2 52 54.94	19 15 6.7	127.48	10	4 48 12.21	26 49 7.2	56.57
11	2 55 13.93	19 27 51.6	126.26	11	4 50 40.67	26 54 46.6	54.90
12	2 57 33.15	19 40 29.1	125.02	12	4 53 9.24	27 0 16.0	53.22
13	2 59 52.60	19 52 59.2	123.77	13	4 55 37.91	27 5 35.3	51.54
14	3 2 12.29	20 5 21.8	122.51	14	4 58 6.68	27 10 44.6	49.86
15	3 4 32.21	20 17 36.9	121.23	15	5 0 35.54	27 15 43.8	48.17
16	3 6 52.36	20 29 44.3	119.94	16	5 3 4.48	27 20 32.8	46.48
17	3 9 12.74	20 41 43.9	118.64	17	5 5 33.50	27 25 11.7	44.79
18	3 11 33.35	20 53 35.7	117.32	18	5 8 2.58	27 29 40.4	43.09
19	3 13 54.20	21 5 19.7	116.00	19	5 10 31.73	27 33 59.0	41.39
20	3 16 15.27	21 16 55.7	114.66	20	5 13 0.93	27 38 7.3	39.69
21	3 18 36.58	21 28 23.6	113.31	21	5 15 30.18	27 42 5.5	37.99
22	3 20 58.12	21 39 43.5	111.95	22	5 17 59.48	27 45 53.4	36.28
23	3 23 19.90	N.21 50 55.2	110.58	23	5 20 28.81	N.27 49 31.1	34.58
<i>FRIDAY 22.</i>				<i>SUNDAY 24.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	3 25 41.91	N.22 1 58.7	109.20	0	5 22 58.17	N.27 52 58.6	32.87
1	3 28 4.14	22 12 53.9	107.80	1	5 25 27.56	27 56 15.8	31.16
2	3 30 26.60	22 23 40.7	106.39	2	5 27 56.96	27 59 22.8	29.45
3	3 32 49.29	22 34 19.0	104.97	3	5 30 26.36	28 2 19.5	27.74
4	3 35 12.20	22 44 48.9	103.55	4	5 32 55.77	28 5 5.9	26.03
5	3 37 35.34	22 55 10.2	102.11	5	5 35 25.17	28 7 42.1	24.32
6	3 39 58.70	23 5 22.8	100.66	6	5 37 54.56	28 10 8.0	22.61
7	3 42 22.28	23 15 26.8	99.20	7	5 40 23.93	28 12 23.7	20.90
8	3 44 46.08	23 25 23.0	97.73	8	5 42 53.27	28 14 29.1	19.19
9	3 47 10.10	23 35 8.4	96.25	9	5 45 22.58	28 16 24.3	17.48
10	3 49 34.33	23 44 45.9	94.76	10	5 47 51.84	28 18 9.2	15.78
11	3 51 58.78	23 54 14.5	93.26	11	5 50 21.05	28 19 43.8	14.07
12	3 54 23.44	24 3 34.1	91.76	12	5 52 50.20	28 21 3.3	12.37
13	3 56 48.31	24 12 44.7	90.24	13	5 55 19.29	28 22 57.7	10.67
14	3 59 13.38	24 21 46.1	88.71	14	5 57 48.33	28 24 52.0	8.97
15	4 1 38.66	24 30 38.4	87.18	15	6 0 17.26	28 26 46.2	7.27
16	4 4 4.13	24 39 21.5	85.63	16	6 3 0.00	28 28 40.4	5.58
17	4 6 29.80	24 47 55.3	84.08	17	6 5 32.74	28 30 34.6	3.89
18	4 8 55.66	24 56 19.8	82.52	18	6 8 5.48	28 32 28.8	2.21
19	4 11 21.71	25 4 34.9	80.95	19	6 11 38.22	28 34 23.0	0.53
20	4 13 47.95	25 12 40.6	79.37	20	6 14 10.96	28 36 17.2	1.18
21	4 16 14.36	25 20 36.8	77.79	21	6 16 43.70	28 38 11.4	0.53
22	4 18 40.96	25 28 23.5	76.20	22	6 19 16.44	28 40 5.6	0.89
23	4 21 7.72	25 36 0.7	74.60	23	6 21 49.18	28 42 59.8	0.24
24	4 23 34.66	N.25 43 28.3		24	6 24 21.92	28 45 54.0	0.59

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	DNE Dec. for 10".
MONDAY 25.				WEDNESDAY 27.			
0	6 22 32.95	N.28 24 49.7	7.81	0	8 16 5.05	N.24 54 16.2	77.65
1	6 25 0.70	28 24 2.8	9.46	1	8 18 19.15	24 46 30.3	78.85
2	6 27 28.29	28 23 6.0	11.11	2	8 20 32.87	24 38 37.2	80.03
3	6 29 55.71	28 21 59.4	12.75	3	8 22 46.23	24 30 37.0	81.20
4	6 32 22.96	28 20 42.9	14.39	4	8 24 59.22	24 22 29.8	82.35
5	6 34 50.03	28 19 16.5	16.02	5	8 27 11.84	24 14 15.7	83.50
6	6 37 16.92	28 17 40.4	17.64	6	8 29 24.09	24 5 54.7	84.63
7	6 39 43.61	28 15 54.6	19.26	7	8 31 35.97	23 57 26.9	85.75
8	6 42 10.11	28 13 59.0	20.87	8	8 33 47.48	23 48 52.4	86.86
9	6 44 36.40	28 11 53.8	22.47	9	8 35 58.61	23 40 11.3	87.95
10	6 47 2.48	28 9 38.9	24.07	10	8 38 9.37	23 31 23.6	89.04
11	6 49 28.34	28 7 14.5	25.66	11	8 40 19.76	23 22 29.3	90.11
12	6 51 53.97	28 4 40.6	27.24	12	8 42 29.78	23 13 28.7	91.17
13	6 54 19.38	28 1 57.2	28.81	13	8 44 39.42	23 4 21.7	92.21
14	6 56 44.55	27 59 4.3	30.37	14	8 46 48.69	22 55 8.4	93.24
15	6 59 9.48	27 56 2.1	31.93	15	8 48 57.59	22 45 48.9	94.27
16	7 1 34.16	27 52 50.5	33.48	16	8 51 6.12	22 36 23.3	95.28
17	7 3 58.59	27 49 29.6	35.02	17	8 53 14.27	22 26 51.7	96.27
18	7 6 22.75	27 45 59.5	36.55	18	8 55 22.06	22 17 14.0	97.26
19	7 8 46.65	27 42 20.2	38.07	19	8 57 29.47	22 7 30.5	98.23
20	7 11 10.29	27 38 31.8	39.58	20	8 59 36.52	21 57 41.1	99.19
21	7 13 33.65	27 34 34.3	41.09	21	9 1 43.20	21 47 46.0	100.14
22	7 15 56.73	27 30 27.8	42.58	22	9 3 49.51	21 37 45.1	101.07
23	7 18 19.52	N.27 26 12.3	44.06	23	9 5 55.45	N.21 27 38.7	102.00
TUESDAY 26.				THURSDAY 28.			
0	7 20 42.02	N.27 21 47.9	45.54	0	9 8 1.03	N.21 17 26.7	102.91
1	7 23 4.23	27 17 14.7	47.00	1	9 10 6.25	21 7 9.3	103.80
2	7 25 26.14	27 12 32.6	48.46	2	9 12 11.10	20 56 46.4	104.69
3	7 27 47.74	27 7 41.9	49.90	3	9 14 15.59	20 46 18.3	105.57
4	7 30 9.03	27 2 42.5	51.33	4	9 16 19.72	20 35 44.9	106.43
5	7 32 30.02	26 57 34.5	52.76	5	9 18 23.50	20 25 6.3	107.28
6	7 34 50.69	26 52 17.9	54.17	6	9 20 26.92	20 14 22.6	108.12
7	7 37 11.04	26 46 52.9	55.57	7	9 22 29.98	20 3 33.9	108.94
8	7 39 31.07	26 41 19.5	56.96	8	9 24 32.70	19 52 40.2	109.76
9	7 41 50.77	26 35 37.7	58.34	9	9 26 35.06	19 41 41.7	110.56
10	7 44 10.14	26 29 47.7	59.71	10	9 28 37.08	19 30 38.3	111.35
11	7 46 29.18	26 23 49.4	61.07	11	9 30 38.75	19 19 30.2	112.13
12	7 48 47.89	26 17 43.0	62.41	12	9 32 40.08	19 8 17.4	112.90
13	7 51 6.25	26 11 28.5	63.74	13	9 34 41.07	18 57 0.0	113.66
14	7 53 24.27	26 5 6.0	65.07	14	9 36 41.71	18 45 38.1	114.40
15	7 55 41.94	25 58 35.6	66.38	15	9 38 42.02	18 34 11.7	115.13
16	7 57 59.26	25 51 57.3	67.68	16	9 40 42.00	18 22 40.9	115.85
17	8 0 16.23	25 45 11.3	68.97	17	9 42 41.64	18 11 5.8	116.56
18	8 2 32.85	25 38 17.5	70.24	18	9 44 40.96	17 59 26.4	117.26
19	8 4 49.12	25 31 16.0	71.51	19	9 46 39.95	17 47 42.8	117.95
20	8 7 5.02	25 24 6.9	72.76	20	9 48 38.61	17 35 55.1	118.63
21	8 9 20.57	25 16 50.3	74.00	21	9 50 36.95	17 24 3.3	119.29
22	8 11 35.76	25 9 26.3	75.23	22	9 52 34.98	17 12 7.5	119.95
23	8 13 50.59	25 1 54.9	76.45	23	9 54 32.69	17 0 7.8	120.59
24	8 16 5.05	N.24 54 16.2		24	9 56 30.09	N.16 48 4.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>FRIDAY 29.</i>				<i>SUNDAY 31.</i>			
0	h m s	N. 16 48 4.3	121.23	0	h m s	N. 6 13 46.8	139.79
1	9 56 30.09	16 35 57.0	121.85	1	11 25 23.65	5 59 48.0	139.96
2	10 0 23.96	16 23 45.9	122.46	2	11 27 9.99	5 45 48.3	140.12
3	10 2 20.44	16 11 31.1	123.06	3	11 28 56.20	5 31 47.6	140.27
4	10 4 16.62	15 59 12.8	123.65	4	11 30 42.29	5 17 46.0	140.41
5	10 6 12.50	15 46 50.9	124.22	5	11 32 28.26	5 3 43.5	140.54
6	10 8 8.09	15 34 25.6	124.79	6	11 34 14.10	4 49 40.3	140.66
7	10 10 3.38	15 21 56.8	125.35	7	11 35 59.83	4 35 36.3	140.78
8	10 11 58.39	15 9 24.7	125.89	8	11 37 45.46	4 21 31.6	140.89
9	10 13 53.12	14 56 49.3	126.43	9	11 39 30.98	4 7 26.2	140.99
10	10 15 47.56	14 44 10.7	126.96	10	11 41 16.39	3 53 20.3	141.08
11	10 17 41.72	14 31 29.0	127.47	11	11 43 1.71	3 39 13.8	141.17
12	10 19 35.61	14 18 44.2	127.97	12	11 44 46.94	3 25 6.8	141.25
13	10 21 29.23	14 5 56.3	128.47	13	11 46 32.07	3 10 59.3	141.32
14	10 23 22.58	13 53 5.5	128.95	14	11 48 17.12	2 56 51.4	141.38
15	10 25 15.67	13 40 11.8	129.43	15	11 50 2.09	2 42 43.2	141.43
16	10 27 8.50	13 27 15.2	129.89	16	11 51 46.98	2 28 34.6	141.48
17	10 29 1.07	13 14 15.9	130.35	17	11 53 31.80	2 14 25.7	141.52
18	10 30 53.39	13 1 13.8	130.79	18	11 55 16.55	2 0 16.6	141.55
19	10 32 45.46	12 48 9.0	131.22	19	11 57 1.24	1 46 7.3	141.57
20	10 34 37.28	12 35 1.7	131.65	20	11 58 45.86	1 31 57.9	141.59
21	10 36 28.85	12 21 51.8	132.06	21	12 0 30.43	1 17 48.3	141.60
22	10 38 20.19	12 8 39.4	132.47	22	12 2 14.94	1 3 38.8	141.60
23	10 40 11.30	N. 11 55 24.6	132.86	23	12 3 59.41	N. 0 49 29.2	141.59
<i>SATURDAY 30.</i>				<i>MONDAY, SEPT. 1.</i>			
0	10 42 2.17	N. 11 42 7.4	133.25	0	12 7 28.21	N. 0 35 19.6	
1	10 43 52.82	11 28 47.9	133.63				
2	10 45 43.24	11 15 26.1	133.99				
3	10 47 33.44	11 2 2.2	134.35				
4	10 49 23.42	10 48 36.1	134.70				
5	10 51 13.20	10 35 7.9	135.04				
6	10 53 2.76	10 21 37.6	135.37				
7	10 54 52.12	10 8 5.4	135.69				
8	10 56 41.27	9 54 31.3	136.00				
9	10 58 30.23	9 40 55.3	136.30				
10	11 0 19.00	9 27 17.5	136.60				
11	11 2 7.58	9 13 37.9	136.88				
12	11 3 55.97	8 59 56.6	137.16				
13	11 5 44.18	8 46 13.6	137.42				
14	11 7 32.21	8 32 29.1	137.68				
15	11 9 20.07	8 18 43.0	137.93				
16	11 11 7.76	8 4 55.4	138.17				
17	11 12 55.29	7 51 6.3	138.41				
18	11 14 42.65	7 37 15.9	138.6				
19	11 16 29.85	7 23 24.1	138.8				
20	11 18 16.90	7 9 31.0	139.0				
21	11 20 3.80	6 55 36.7	139.1				
22	11 21 50.56	6 41 41.2	139.1				
23	11 23 37.17	6 27 44.5	139.1				
24	11 25 23.65	N. 6 13 46.8					

PHASES OF THE MOON.

		d	h	m	
☽	F ₂	-	8	12	22.2
☉	'		15	17	54.6
			22	9	7.2
			19	22	13.5

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			III ^h .			VI ^h .			IX ^h .		
			o	r	"	o	r	"	o	r	"	o	r	"
3	SUN	W.	29	55	38	31	17	49	32	39	56	34	2	0
	Spica η	E.	41	5	24	39	35	0	38	4	46	36	34	40
	Mars	E.	50	56	30	49	30	17	48	4	14	46	38	19
	Antares	E.	86	58	15	85	27	47	83	57	27	82	27	16
4	SUN	W.	40	51	12	42	12	50	43	34	23	44	55	52
	Spica η	E.	29	6	16	27	36	58	26	7	48	24	38	44
	Mars	E.	39	30	45	38	5	35	36	40	32	35	15	35
	Antares	E.	74	58	15	73	28	48	71	59	27	70	30	12
	α Aquilæ	E.	120	12	52	119	4	43	117	56	6	116	47	4
5	SUN	W.	51	42	29	53	3	40	54	24	50	55	45	58
	Mars	E.	28	12	5	26	47	35	25	23	8	23	58	44
	Antares	E.	63	5	7	61	36	17	60	7	30	58	38	46
	α Aquilæ	E.	110	56	31	109	45	30	108	34	13	107	22	43
6	SUN	W.	62	31	33	63	52	41	65	13	51	66	35	4
	Antares	E.	51	15	22	49	46	41	48	18	0	46	49	16
	α Aquilæ	E.	101	22	3	100	9	23	98	56	35	97	43	38
7	SUN	W.	73	21	57	74	43	34	76	5	16	77	27	5
	Antares	E.	39	24	54	37	55	49	36	26	38	34	57	21
	α Aquilæ	E.	91	37	6	90	23	29	89	9	48	87	56	2
	Fomalhaut	E.	120	28	22	119	4	45	117	40	53	116	16	47
8	SUN	W.	84	18	4	85	40	43	87	3	33	88	26	33
	Spica η	W.	18	29	57	19	59	43	21	29	43	22	59	56
	Antares	E.	27	29	4	25	58	59	24	28	43	22	58	17
	α Aquilæ	E.	81	46	24	80	32	22	79	18	20	78	4	17
9	Fomalhaut	E.	109	12	47	107	47	17	106	21	32	104	55	33
	SUN	W.	95	24	39	96	48	57	98	13	30	99	38	18
	Spica η	W.	30	34	25	32	6	3	33	37	56	35	10	5
	Mars	W.	17	11	31	18	38	50	20	6	24	21	34	14
	α Aquilæ	E.	71	54	30	70	40	45	69	27	6	68	13	34
10	Fomalhaut	E.	97	41	56	96	14	27	94	46	42	93	18	42
	SUN	W.	106	46	28	108	13	0	109	39	50	111	6	59
	Spica η	W.	42	55	8	44	29	4	46	3	19	47	37	54
	Mars	W.	28	57	33	30	27	7	31	57	0	33	27	12
	α Aquilæ	E.	62	8	48	60	56	38	59	44	49	58	33	23
11	Fomalhaut	E.	85	54	34	84	24	54	82	54	58	81	24	45
	α Pegasi	E.	107	0	17	105	33	26	104	6	12	102	38	33
	SUN	W.	118	27	53	119	57	7	121	26	44	122	56	42
	Spica η	W.	55	36	2	57	12	46	58	49	51	60	27	20
12	Mars	W.	41	3	22	42	35	41	44	8	22	45	41	26
	Antares	W.	9	41	48	11	18	24	12	55	25	14	32	51
	α Aquilæ	E.	52	44	7	51	36	17	50	29	19	49	23	18
	Fomalhaut	E.	73	49	25	72	17	30	70	45	20	69	12	54
	α Pegasi	E.	95	14	31	93	44	33	92	14	13	90	43	31
	Jupiter	E.	111	12	37	109	35	31	107	58	3	106	20	11
	Spica η	W.	68	40	38	70	20	30	72	0	47	73	41	28

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P.L.	XV ^h .	P.L.	XVIII ^h .	P.L.	XXI ^h .	P.L.
				of diff.		of diff.		of diff.		of diff.
3	SUN	W.	35 23 59	3419	36 45 54	3423	38 7 45	3427	39 29 31	3431
	Spica η	E.	35 4 43	3020	33 34 55	3026	32 5 14	3032	30 35 41	3038
	Mars	E.	45 12 33	3226	43 46 55	3232	42 21 24	3239	40 56 1	3245
	Antares	E.	80 57 12	3014	79 27 17	3020	77 57 29	3026	76 27 49	3031
4	SUN	W.	46 17 18	3448	47 38 40	3451	48 59 59	3454	50 21 15	3455
	Spica η	E.	23 9 47	3067	21 40 57	3072	20 12 13	3078	18 43 36	3083
	Mars	E.	33 50 44	3270	32 25 58	3274	31 1 16	3278	29 36 39	3281
	Antares	E.	69 1 2	3055	67 31 57	3058	66 2 56	3061	64 33 59	3065
	α Aquilæ	E.	115 37 39	4114	114 27 51	4093	113 17 43	4074	112 7 16	4056
5	SUN	W.	57 7 5	3462	58 28 12	3462	59 49 18	3462	61 10 25	3461
	Mars	E.	22 34 22	3293	21 10 2	3294	19 45 43	3294	18 21 24	3294
	Antares	E.	57 10 4	3074	55 41 22	3075	54 12 42	3075	52 44 2	3075
	α Aquilæ	E.	106 10 58	3982	104 59 1	3970	103 46 52	3960	102 34 33	3949
6	SUN	W.	67 56 19	3451	69 17 38	3448	70 39 0	3445	72 0 26	3440
	Antares	E.	45 20 31	3068	43 51 42	3065	42 22 50	3062	40 53 54	3059
	α Aquilæ	E.	96 30 33	3908	95 17 21	3901	94 4 2	3895	92 50 37	3889
7	SUN	W.	78 49 1	3412	80 11 4	3405	81 33 15	3397	82 55 35	3389
	Antares	E.	33 27 57	3034	31 58 26	3028	30 28 48	3021	28 59 1	3013
	α Aquilæ	E.	86 42 12	3867	85 28 19	3864	84 14 23	3862	83 0 25	3859
	Fomalhaut	E.	114 52 27	3281	113 27 53	3269	112 3 5	3257	110 38 3	3245
8	SUN	W.	89 49 45	3341	91 13 9	3330	92 36 46	3319	94 0 36	3307
	Spica η	W.	24 30 22	2978	26 1 2	2968	27 31 55	2956	29 3 3	2945
	Antares	E.	21 27 39	2971	19 56 50	2961	18 25 48	2951	16 54 34	2940
	α Aquilæ	E.	76 50 15	3860	75 36 15	3861	74 22 16	3865	73 8 21	3869
	Fomalhaut	E.	103 29 20	3183	102 2 51	3172	100 36 8	3159	99 9 10	3146
9	SUN	W.	101 3 22	3241	102 28 43	3227	103 54 20	3212	105 20 15	3197
	Spica η	W.	36 42 30	2881	38 15 13	2867	39 48 14	2854	41 21 32	2840
	Mars	W.	23 2 20	3090	24 30 42	3076	25 59 21	3061	27 28 18	3047
	α Aquilæ	E.	67 0 12	3908	65 47 0	3920	64 34 1	3934	63 21 16	3951
	Fomalhaut	E.	91 50 25	3081	90 21 52	3067	88 53 2	3054	87 23 56	3041
10	SUN	W.	112 34 29	3116	114 2 19	3100	115 30 29	3083	116 59 0	3065
	Spica η	W.	49 12 49	2763	50 48 5	2747	52 23 43	2731	53 59 42	2715
	Mars	W.	34 57 44	2968	36 28 37	2952	37 59 50	2935	39 31 25	2917
	α Aquilæ	E.	57 22 25	4072	56 11 56	4107	55 2 1	4145	53 52 43	4189
	Fomalhaut	E.	79 54 15	2972	78 23 27	2959	76 52 23	2946	75 21 2	2933
	α Pegasi	E.	101 10 31	3087	99 42 6	3068	98 13 17	3050	96 44 6	3031
11	SUN	W.	124 27 3	2975	125 57 47	2957	127 28 53	2939	129 0 23	2921
	Spica η	W.	62 5 12	2629	63	65 22 7	2594	67 1 11	2577	
	Mars	W.	47 14 53	2829	4	50 22 56	2792	51 57 34	2774	
	Antares	W.	16 10 42	2630		19 27 36	2594	21 6 39	2576	
	α Aquilæ	E.	48 18 20	4504		16 12 0	4692	45 10 54	4803	
	Fomalhaut	E.	67 40 12	28		14 34		63 0 41	2839	
	α Pegasi	E.	89 12 27	**		9		84 37 7	2893	
	Jupiter	E.	104 41 56					79 44 48	2560	
12	Spica η	W.	75 22 34					28 21	2435	

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .						
		°	'	"	°	'	"	°	'	"	°	'	"				
12	Mars W.	53	32	36	2756	55	8	2	2738	56	43	52	2719	58	20	7	2701
	Antares W.	22	46	7	2558	24	26	0	2540	26	6	18	2522	27	47	0	2504
	Fomalhaut E.	61	27	4	2830	59	53	15	2821	58	19	15	2814	56	45	5	2808
	α Pegasi E.	83	4	39	2877	81	31	51	2862	79	58	44	2848	78	25	19	2835
	Jupiter E.	98	4	58	2541	96	24	42	2524	94	44	2	2506	93	2	57	2488
13	Spica ♍ W.	82	11	6	2417	83	54	16	2400	85	37	50	2384	87	21	48	2366
	Mars W.	66	27	28	2610	68	6	10	2592	69	45	16	2574	71	24	47	2557
	Antares W.	36	16	44	2416	37	59	56	2400	39	43	31	2382	41	27	31	2365
	Fomalhaut E.	48	52	57	2801	47	18	30	2806	45	44	10	2814	44	10	0	2825
	α Pegasi E.	70	34	2	2777	68	59	4	2768	67	23	54	2761	65	48	35	2754
	Jupiter E.	84	31	19	2400	82	47	44	2384	81	3	46	2366	79	19	22	2350
	α Arietis E.	112	0	25	2469	110	18	28	2450	108	36	5	2432	106	53	16	2414
14	Spica ♍ W.	96	7	35	2287	97	53	53	2272	99	40	33	2258	101	27	35	2244
	Mars W.	79	48	11	2474	81	30	0	2459	83	12	11	2444	84	54	43	2429
	Antares W.	50	13	27	2286	51	59	47	2271	53	46	29	2256	55	33	33	2243
	α Pegasi E.	57	50	31	2747	56	14	54	2751	54	39	22	2758	53	3	59	2769
	Jupiter E.	70	31	29	2270	68	44	45	2255	66	57	39	2240	65	10	11	2227
	α Arietis E.	98	13	4	2332	96	27	51	2317	94	42	16	2302	92	56	20	2287
15	Mars W.	93	32	23	2364	95	16	50	2352	97	1	34	2340	98	46	35	2330
	Antares W.	64	33	52	2178	66	22	52	2167	68	12	9	2156	70	1	43	2147
	α Pegasi E.	45	11	57	2876	43	39	7	2913	42	7	4	2957	40	35	57	3009
	Jupiter E.	56	7	49	2163	54	18	25	2151	52	28	43	2140	50	38	45	2130
	α Arietis E.	84	1	37	2225	82	13	46	2214	80	25	39	2203	78	37	16	2194
	Aldebaran E.	114	31	59	2249	112	44	44	2236	110	57	10	2223	109	9	17	2212
16	Mars W.	107	35	8	2287	109	21	26	2280	111	7	55	2274	112	54	32	2269
	Antares W.	79	13	2	2104	81	3	55	2097	82	54	58	2092	84	46	10	2087
	α Aquilæ W.	42	22	57	4611	43	25	12	4432	44	30	5	4271	45	37	25	4127
	Jupiter E.	41	25	18	2088	39	34	0	2081	37	42	32	2075	35	50	54	2070
	α Arietis E.	69	32	7	2157	67	42	34	2151	65	52	53	2147	64	3	5	2143
	Aldebaran E.	100	5	56	2165	98	16	36	2158	96	27	5	2151	94	37	24	2146
17	Antares W.	94	3	51	2070	95	55	36	2068	97	47	24	2068	99	39	13	2068
	α Aquilæ W.	51	44	52	3600	53	3	27	3524	54	23	25	3456	55	44	38	3394
	Jupiter E.	26	31	7	2053	24	38	56	2053	22	46	44	2053	20	54	32	2053
	α Arietis E.	54	53	14	2139	53	3	14	2141	51	13	18	2144	49	23	26	2149
	Aldebaran E.	85	27	18	2130	83	37	4	2129	81	46	49	2128	79	56	33	2129
	Saturn E.	117	59	54	2129	116	9	39	2126	114	19	19	2125	112	28	58	2124
18	Antares W.	108	58	1	2077	110	49	36	2080	112	41	6	2084	114	32	30	2089
	α Aquilæ W.	62	46	3	3173	64	12	44	3143	65	40	2	3115	67	7	53	3092
	Fomalhaut W.	31	12	59	2918	32	44	55	2841	34	18	30	2775	35	53	31	2720
	α Arietis E.	40	16	25	2190	38	27	42	2203	36	39	19	2219	34	51	19	2237
	Aldebaran E.	70	45	53	2144	68	56	1	2149	67	6	17	2155	65	16	42	2162
	Saturn E.	103	17	12	2130	101	26	58	2133	99	36	50	2137	97	46	47	2142
19	α Aquilæ W.	74	32	58	3020	76	2	46	3013	77	32	42	3009	79	2	43	3007
	Fomalhaut W.	44	3	26	2553	45	43	26	2534	47	23	52	2519	49	4	39	2506
	α Pegasi W.	28	3	4	4032	29	14	12	3827	30	28	46	3656	31	46	20	3513
	Aldebaran E.	56	11	46	2208	54	23	31	2220	52	35	34	2233	50	47	56	2247

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .					
		°	'	"	°	'	"	°	'	"	°	'	"			
19	Saturn E.	88	38	34	2172	86	49	24	2180	85	0	27	2188	83	11	42
	SUN E.	134	54	14	2434	133	11	28	2441	131	28	52	2448	129	46	26
20	α Aquilæ W.	86	32	44	3025	88	2	26	3033	89	31	58	3043	91	1	17
	Fomalhaut W.	57	31	46	2480	59	13	28	2479	60	55	10	2480	62	36	51
	α Pegasi W.	38	46	57	3069	40	15	45	3016	41	45	38	2970	43	16	28
	Jupiter W.	18	4	21	2174	19	53	27	2184	21	42	19	2194	23	30	55
	Aldebaran E.	41	55	21	2333	40	10	9	2355	38	25	29	2378	36	41	23
	Saturn E.	74	11	24	2247	72	24	6	2258	70	37	4	2269	68	50	19
	SUN E.	121	17	25	2504	119	36	18	2515	117	55	26	2527	116	14	50
21	α Aquilæ W.	98	23	32	3139	99	50	54	3161	101	17	50	3184	102	44	18
	Fomalhaut W.	71	3	54	2510	72	44	53	2518	74	25	41	2526	76	6	18
	α Pegasi W.	51	0	26	2816	52	34	33	2804	54	8	56	2793	55	43	33
	Jupiter W.	32	29	54	2262	34	16	50	2273	36	3	29	2285	37	49	51
	Aldebaran E.	28	11	19	2582	26	31	59	2633	24	53	49	2694	23	17	1
	Saturn E.	60	1	2	2344	58	16	6	2357	56	31	30	2371	54	47	14
	SUN E.	107	55	52	2599	106	16	56	2612	104	38	17	2625	102	59	56
22	α Aquilæ W.	109	48	40	3359	111	11	43	3395	112	34	5	3434	113	55	43
	Fomalhaut W.	84	25	58	2588	86	5	9	2600	87	44	4	2612	89	22	43
	α Pegasi W.	63	38	14	2775	65	13	15	2776	66	48	14	2779	68	23	9
	Jupiter W.	46	37	11	2359	48	21	45	2371	50	6	29	2384	51	49	59
	α Arietis W.	20	0	39	2769	21	35	48	2725	23	11	54	2695	24	48	40
	Saturn E.	46	10	56	2458	44	28	44	2474	42	46	54	2490	41	5	26
	SUN E.	94	52	37	2705	93	16	4	2719	91	39	49	2732	90	3	51
23	Fomalhaut W.	97	31	32	2692	99	8	22	2706	100	44	54	2721	102	21	6
	α Pegasi W.	76	16	5	2814	77	50	14	2822	79	24	13	2831	80	58	0
	Jupiter W.	60	25	25	2458	62	7	37	2470	63	49	33	2482	65	31	12
	α Arietis W.	32	57	40	2632	34	35	52	2632	36	14	4	2634	37	52	13
	Saturn E.	32	43	59	2596	31	4	58	2616	29	26	25	2639	27	48	23
	SUN E.	82	8	30	2812	80	34	18	2826	79	0	24	2839	77	26	47
24	α Pegasi W.	88	43	50	2893	90	16	18	2904	91	48	32	2916	93	20	31
	Jupiter W.	73	55	18	2552	75	35	19	2564	77	15	4	2575	78	54	34
	α Arietis W.	46	1	34	2664	47	39	2	2671	49	16	21	2678	50	53	30
	Aldebaran W.	17	17	44	3308	18	41	46	3204	20	7	50	3126	21	35	28
	SUN E.	69	42	53	2916	68	10	55	2929	66	39	13	2942	65	7	47
25	α Pegasi W.	100	56	26	2994	102	26	46	3009	103	56	48	3024	105	26	31
	Jupiter W.	87	8	23	2638	88	46	26	2648	90	24	16	2659	92	1	51
	α Arietis W.	58	56	36	2726	60	32	41	2735	62	8	34	2744	63	44	16
	Aldebaran W.	29	7	21	2919	30	39	16	2905	32	11	28	2896	33	43	52
	SUN E.	57	34	23	3013	56	4	26	3025	54	34	44	3036	53	5	16
26	Jupiter W.	100	6	35	2716	101	42	54	2725	103	19	1	2734	104	54	56
	α Arietis W.	71	39	57	2795	73	14	32	2802	74	48	57	2811	76	23	10
	Aldebaran W.	41	27	14	2880	42	59	58	2882	44	32	40	2884	46	5	20
	SUN E.	45	41	20	3102	44	13	13	3113	42	45	19	3124	41	17	38
27	α Arietis W.	84	11	35	2860	85	44	45	2869	87	17	44	2876	88	50	34
	Aldebaran W.	53	47	34	2906	55	19	45	2911	56	51	50	2916	58	23	48
	SUN E.	34	2	23	3188	32	35	59	3198	31	9	47	3209	29	43	48

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.				
19	Saturn E.	81	23	10	2206	79	34	51	2216	77	46	47	2226	75	58	58	2236
	SUN E.	128	4	12	2466	126	22	11	2475	124	40	22	2484	122	58	46	2494
20	α Aquilæ W.	92	30	21	3069	93	59	9	3085	95	27	37	3101	96	55	46	3119
	Fomalhaut W.	64	18	28	2486	66	0	1	2491	67	41	27	2497	69	22	45	2503
	α Pegasi W.	44	48	6	2901	46	20	24	2873	47	53	17	2850	49	26	40	2832
	Jupiter W.	25	19	16	2216	27	7	20	2227	28	55	8	2238	30	42	39	2249
	Aldebaran E.	34	57	53	2431	33	15	3	2463	31	32	57	2498	29	51	41	2537
	Saturn E.	67	3	51	2293	65	17	42	2305	63	31	50	2318	61	46	16	2331
	SUN E.	114	34	29	2550	112	54	25	2561	111	14	37	2574	109	35	6	2586
21	α Aquilæ W.	104	10	17	3235	105	35	44	3263	107	0	39	3294	108	24	58	3326
	Fomalhaut W.	77	46	42	2545	79	26	53	2556	81	6	49	2566	82	46	31	2577
	α Pegasi W.	57	18	19	2780	58	53	13	2777	60	28	11	2775	62	3	12	2774
	Jupiter W.	39	35	55	2309	41	21	41	2321	43	7	9	2334	44	52	19	2346
	Aldebaran E.	21	41	49	2853	20	8	30	2961	18	37	28	3097	17	9	15	3271
	Saturn E.	53	3	17	2399	51	19	41	2413	49	36	25	2428	47	53	30	2443
	SUN E.	101	21	52	2652	99	44	7	2664	98	6	39	2677	96	29	29	2691
22	α Aquilæ W.	115	16	36	3517	116	36	41	3563	117	55	55	3612	119	14	16	3663
	Fomalhaut W.	91	1	4	2638	92	39	8	2651	94	16	54	2664	95	54	22	2678
	α Pegasi W.	69	57	58	2788	71	32	42	2794	73	7	18	2800	74	41	46	2807
	Jupiter W.	53	33	39	2408	55	17	2	2421	57	0	7	2433	58	42	54	2445
	α Arietis W.	26	25	56	2657	28	3	34	2645	29	41	28	2638	31	19	31	2634
	Saturn E.	39	24	21	2522	37	43	39	2540	36	3	21	2557	34	23	27	2576
	SUN E.	88	28	11	2759	86	52	49	2772	85	17	45	2786	83	42	59	2799
23	Fomalhaut W.	103	56	58	2751	105	32	30	2766	107	7	42	2782	108	42	34	2797
	α Pegasi W.	82	31	36	2850	84	4	59	2860	85	38	9	2870	87	11	6	2881
	Jupiter W.	67	12	33	2505	68	53	39	2517	70	34	28	2529	72	15	1	2540
	α Arietis W.	39	30	18	2641	41	8	18	2646	42	46	11	2651	44	23	57	2657
	Saturn E.	26	10	52	2688	24	33	56	2717	22	57	38	2750	21	22	4	2787
	SUN E.	75	53	27	2866	74	20	24	2878	72	47	37	2891	71	15	7	2904
24	α Pegasi W.	94	52	15	2941	96	23	42	2953	97	54	54	2966	99	25	49	2981
	Jupiter W.	80	33	49	2596	82	12	50	2607	83	51	35	2618	85	30	6	2628
	α Arietis W.	52	30	29	2694	54	7	17	2702	55	43	55	2711	57	20	21	2719
	Aldebaran W.	23	4	19	3020	24	34	7	2985	26	4	39	2956	27	35	47	2935
	SUN E.	63	36	36	2966	62	5	40	2978	60	35	0	2989	59	4	34	3001
25	α Pegasi W.	106	55	55	3054	108	25	1	3071	109	53	46	3088	111	22	10	3105
	Jupiter W.	93	39	14	2678	95	16	23	2687	96	53	20	2697	98	30	4	2707
	α Arietis W.	65	19	46	2760	66	55	6	2769	68	30	14	2778	70	5	11	2786
	Aldebaran W.	35	16	24	2885	36	49	2	2882	38	21	44	2880	39	54	29	2880
	SUN E.	51	36	1	3059	50	7	1	3069	48	38	14			40	3091	
26	Jupiter W.	106	30	40	2751	108	6	12	2760	109	41				43	27	
	α Arietis W.	77	57	12	2828	79	31	4	2836	81					15	28	
	Aldebaran W.	47	37	56	2890	49	10	28	2893	50					8	2	
	SUN E.	39	50	9	3145	38	22	54	3155	36							
27	α Arietis W.	90	23	12	2892	91	55	41	2900	92							
	Aldebaran W.	59	55	39	2927	61	27	24	2932	61							
	SUN E.	28	18	2	3231	26	52	30	3243								

CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 15^h, MEAN TIME.

Day of the Month.	West.	East.
1		4 [•] ○ -2 -3
2	4 [•]	○ 2 [•] 1 3 [•]
3	4 [•] 2 [•] 1	○ 3 [•]
4	4 [•] 3 [•]	○ 1 [•]
5	4 [•] 3 [•] -1	○ 2 [•]
6	4 [•] 3 [•] 2 [•]	○ 1 [•]
7	4 [•] 2 [•]	○ 3 [•]
8	4 [•] 1 [•]	○ -2 3 [•]
9		○ 4 [•] 1 2 [•] 3 [•]
10	2 [•] 1 [•]	○ 3 [•] 4 [•]
11	3 [•] 2 [•]	○ 1 [•] -4 [•]
12	3 [•] -1	○ 2 [•] 4 [•]
13	3 [•] 2 [•]	○ 1 [•] 4 [•]
14	-2 -1	○ 3 [•] 4 [•]
15	1 [•] ○	○ -2 3 [•] 4 [•]
16		○ -1 2 [•] 4 [•] 3 [•]
17	2 [•] 1 [•]	○ 4 [•] 3 [•]
18	4 [•] 3 [•] 2 [•]	○ -1
19	4 [•] 3 [•] 1	○ -2
20	4 [•] 3 [•]	○ 1 [•]
21	4 [•] 2 [•] 1	○
22	4 [•]	○ 1 [•] 2 [•] 3 [•]
23	4 [•]	○ 2 [•] 3 [•]
24	4 [•] 2 [•] 1	○ 3 [•]
25	4 [•] 2 [•] 3 [•]	○ -1
26	3 [•] 1	○ 4 [•] 2 [•]
27	3 [•]	○ 2 [•] 1 [•] 4 [•]
28	2 [•] 1	○ -4 [•]
29		○ 1 [•] 2 [•] 3 [•] 4 [•]
30	-1 ●	○ 2 [•] 3 [•] 4 [•]
31	2 [•] 1 [•]	○ 3 [•] 4 [•]

This Table represents, at 15^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^s . 17 ^m . 27 ^s .	From Mean Noon of January 1.		
	At Mean Midnight,						Days.	Day of the Year.	Fraction of the Year.
	A	B	C	D					
1	+1 ^o 0791	-1 ^o 1954	+9 ^o 6995	-0 ^o 9338	15 16 22 ^s .72	132	213	.583	
2	1 ^o 0876	1 ^o 1893	9 ^o 7023	0 ^o 9348	15 12 26 ^s .81	133	214	.586	
3	1 ^o 0959	1 ^o 1829	9 ^o 7050	0 ^o 9358	15 8 30 ^s .90	134	215	.589	
4	+1 ^o 1039	-1 ^o 1763	+9 ^o 7076	-0 ^o 9369	15 4 34 ^s .99	135	216	.591	
5	1 ^o 1117	1 ^o 1695	9 ^o 7103	0 ^o 9379	15 0 39 ^s .07	136	217	.594	
6	1 ^o 1192	1 ^o 1624	9 ^o 7128	0 ^o 9390	14 56 43 ^s .16	137	218	.597	
7	+1 ^o 1264	-1 ^o 1551	+9 ^o 7154	-0 ^o 9400	14 52 47 ^s .25	138	219	.600	
8	1 ^o 1334	1 ^o 1476	9 ^o 7179	0 ^o 9411	14 48 51 ^s .34	139	220	.602	
9	1 ^o 1402	1 ^o 1398	9 ^o 7204	0 ^o 9421	14 44 55 ^s .43	140	221	.605	
10	+1 ^o 1467	-1 ^o 1317	+9 ^o 7228	-0 ^o 9431	14 40 59 ^s .52	141	222	.608	
11	1 ^o 1531	1 ^o 1234	9 ^o 7252	0 ^o 9441	14 37 3 ^s .61	142	223	.611	
12	1 ^o 1592	1 ^o 1147	9 ^o 7276	0 ^o 9452	14 33 7 ^s .70	143	224	.613	
13	+1 ^o 1651	-1 ^o 1058	+9 ^o 7299	-0 ^o 9462	14 29 11 ^s .79	144	225	.616	
14	1 ^o 1709	1 ^o 0965	9 ^o 7322	0 ^o 9472	14 25 15 ^s .88	145	226	.619	
15	1 ^o 1764	1 ^o 0869	9 ^o 7344	0 ^o 9482	14 21 19 ^s .97	146	227	.621	
16	+1 ^o 1818	-1 ^o 0770	+9 ^o 7366	-0 ^o 9491	14 17 24 ^s .06	147	228	.624	
17	1 ^o 1869	1 ^o 0667	9 ^o 7388	0 ^o 9501	14 13 28 ^s .15	148	229	.627	
18	1 ^o 1919	1 ^o 0560	9 ^o 7410	0 ^o 9510	14 9 32 ^s .24	149	230	.630	
19	+1 ^o 1967	-1 ^o 0449	+9 ^o 7431	-0 ^o 9520	14 5 36 ^s .33	150	231	.632	
20	1 ^o 2014	1 ^o 0334	9 ^o 7452	0 ^o 9529	14 1 40 ^s .43	151	232	.635	
21	1 ^o 2058	1 ^o 0215	9 ^o 7473	0 ^o 9538	13 57 44 ^s .52	152	233	.638	
22	+1 ^o 2101	-1 ^o 0090	+9 ^o 7493	-0 ^o 9547	13 53 48 ^s .61	153	234	.641	
23	1 ^o 2143	0 ^o 9961	9 ^o 7513	0 ^o 9556	13 49 52 ^s .70	154	235	.643	
24	1 ^o 2182	0 ^o 9827	9 ^o 7533	0 ^o 9565	13 45 56 ^s .79	155	236	.646	
25	+1 ^o 2221	-0 ^o 9687	+9 ^o 7552	-0 ^o 9573	13 42 0 ^s .88	156	237	.649	
26	1 ^o 2257	0 ^o 9541	9 ^o 7572	0 ^o 9581	13 38 4 ^s .97	157	238	.652	
27	1 ^o 2293	0 ^o 9388	9 ^o 7591	0 ^o 9589	13 34 9 ^s .06	158	239	.654	
28	+1 ^o 2326	-0 ^o 9228	+9 ^o 7609	-0 ^o 9597	13 30 13 ^s .15	159	240	.657	
29	1 ^o 2359	0 ^o 9061	9 ^o 7628	0 ^o 9605	13 26 17 ^s .24	160	241	.660	
30	1 ^o 2389	0 ^o 8886	9 ^o 7646	0 ^o 9612	13 22 21 ^s .34	161	242	.663	
31	1 ^o 2419	0 ^o 8703	9 ^o 7664	0 ^o 9619	13 18 25 ^s .43	162	243	.665	
32	+1 ^o 2447	-0 ^o 8509	+9 ^o 7682	-0 ^o 9626	13 14 29 ^s .52	163	244	.668	

AT APPARENT NOON.									
Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.		I 1 I
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.		m s	m s	
		h m s	s	° ' "	"	m s	m s	s	
Mon.	1	10 43 4	9°065	N. 8 8 5	54°81	4 39	0 15	17	
Tues.	2	10 46 42	9°053	7 46 10	55°12	4 34	0 34	11	
Wed.	3	10 50 19	9°042	7 24 7	55°42	4 31	0 53	34	
Thur.	4	10 53 56	9°032	7 1 57	55°70	4 27	1 12	82	
Frid.	5	10 57 33	9°022	6 39 40	55°97	4 24	1 32	56	
Sat.	6	11 1 9	9°013	6 17 17	56°22	4 21	1 52	53	
Sun.	7	11 4 46	9°005	5 54 47	56°46	4 18	2 12	72	
Mon.	8	11 8 22	8°997	5 32 12	56°69	4 15	2 33	11	
Tues.	9	11 11 58	8°990	5 9 32	56°91	4 13	2 53	68	
Wed.	10	11 15 34	8°985	4 46 46	57°11	4 11	3 14	40	
Thur.	11	11 19 9	8°980	4 23 55	57°30	4 09	3 35	27	
Frid.	12	11 22 45	8°976	4 1 0	57°48	4 08	3 56	24	
Sat.	13	11 26 20	8°973	3 38 1	57°64	4 07	4 17	32	
Sun.	14	11 29 55	8°971	3 14 57	57°79	4 06	4 38	47	
Mon.	15	11 33 31	8°970	2 51 51	57°92	4 05	4 59	66	
Tues.	16	11 37 6	8°970	2 28 41	58°04	4 05	5 20	88	
Wed.	17	11 40 41	8°971	2 5 27	58°16	4 05	5 42	10	
Thur.	18	11 44 17	8°973	1 42 12	58°26	4 05	6 3	29	
Frid.	19	11 47 52	8°976	1 18 53	58°35	4 06	6 24	44	
Sat.	20	11 51 27	8°980	0 55 33	58°42	4 07	6 45	52	
Sun.	21	11 55 3	8°984	0 32 11	58°48	4 08	7 6	51	
Mon.	22	11 58 38	8°989	N. 0 8 48	58°52	4 10	7 27	39	
Tues.	23	12 2 14	8°995	S. 0 14 36	58°55	4 12	7 48	14	
Wed.	24	12 5 50	9°002	0 38 1	58°56	4 14	8 8	74	
Thur.	25	12 9 26	9°011	1 1 27	58°56	4 16	8 29	18	
Frid.	26	12 13 2	9°020	1 24 52	58°55	4 19	8 49	42	
Sat.	27	12 16 39	9°029	1 48 17	58°52	4 22	9 9	45	
Sun.	28	12 20 16	9°039	2 11 42	58°47	4 25	9 29	26	
Mon.	29	12 23 53	9°049	2 35 5	58°41	4 29	9 48	83	
Tues.	30	12 27 30	9°061	2 58 27	58°33	4 33	10 8	15	
Wed.	31	12 31 7		S. 3 21 47		4 37	10 27	18	

*The Time of the Semidiameter passing may be found by subtracting 0' 18 from the Sidereal T

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
Mon.	1	h m s 10 43 47.79	N. ° ' " 8 8 5.6	' " 15 53.7	m s 0 15.18	h m s 10 43 19.97
Tues.	2	10 46 42.40	7 46 9.9	15 54.0	0 34.12	10 47 16.52
Wed.	3	10 50 19.73	7 24 6.7	15 54.2	0 53.35	10 51 13.08
Thur.	4	10 53 56.79	7 1 56.4	15 54.4	1 12.84	10 55 9.63
Frid.	5	10 57 33.60	6 39 39.2	15 54.7	1 32.58	10 59 6.18
Sat.	6	11 1 10.18	6 17 15.6	15 54.9	1 52.56	11 3 2.74
Sun.	7	11 4 46.54	5 54 45.9	15 55.1	2 12.75	11 6 59.29
Mon.	8	11 8 22.70	5 32 10.4	15 55.4	2 33.15	11 10 55.85
Tues.	9	11 11 58.68	5 9 29.4	15 55.6	2 53.72	11 14 52.40
Wed.	10	11 15 34.50	4 46 43.2	15 55.9	3 14.45	11 18 48.95
Thur.	11	11 19 10.19	4 23 52.2	15 56.1	3 35.32	11 22 45.51
Frid.	12	11 22 45.76	4 0 56.8	15 56.4	3 56.30	11 26 42.06
Sat.	13	11 26 21.23	3 37 57.1	15 56.7	4 17.38	11 30 38.61
Sun.	14	11 29 56.63	3 14 53.5	15 57.0	4 38.54	11 34 35.17
Mon.	15	11 33 31.99	2 51 46.3	15 57.2	4 59.73	11 38 31.72
Tues.	16	11 37 7.32	2 28 35.8	15 57.5	5 20.96	11 42 28.28
Wed.	17	11 40 42.65	2 5 22.3	15 57.7	5 42.18	11 46 24.83
Thur.	18	11 44 18.00	1 42 6.2	15 58.0	6 3.38	11 50 21.38
Frid.	19	11 47 53.40	1 18 47.6	15 58.3	6 24.54	11 54 17.94
Sat.	20	11 51 28.87	0 55 27.0	15 58.5	6 45.62	11 58 14.49
Sun.	21	11 55 4.43	0 32 4.7	15 58.8	7 6.61	12 2 11.04
Mon.	22	11 58 40.10	N. 0 8 40.9	15 59.0	7 27.50	12 6 7.60
Tues.	23	12 2 15.90	S. 0 14 43.9	15 59.3	7 48.25	12 10 4.15
Wed.	24	12 5 51.85	0 38 9.4	15 59.6	8 8.85	12 14 0.70
Thur.	25	12 9 27.96	1 1 35.3	15 59.9	8 29.29	12 17 57.26
Frid.	26	12 13 4.27	1 25 1.1	16 0.1	8 49.54	12 21 53.81
Sat.	27	12 16 40.79	1 48 26.7	16 0.4	9 9.58	12 25 50.37
Sun.	28	12 20 17.53	2 11 51.4	16 0.6	9 29.39	12 29 46.92
Mon.	29	12 23 54.51	2 35 15.0	16 0.9	9 48.96	13 47
Tues.	30	12 27 31.75	2 58 37.2	16 1.2	10 8.28	03
Wed.	31	12 31 9.26	S. 3 21 57.4	16 1.5	10 27	3

* The Semidiameter for Apparent Noon may be assumed the same

MEAN TIME.							
Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.	Noon.	Noon.	Midnight.	Noon.	Midnight.
1	159 10 48.8	N. 0° 23'	0.0036979	14 44.2	14 43.4	54 4.7	54 1'
2	160 8 59.0	N. 0° 10'	0.0035897	14 43.0	14 43.1	54 0.3	54 0'
3	161 7 10.8	S. 0° 03'	0.0034799	14 43.7	14 44.8	54 2.9	54 7'
4	162 5 24.2	0° 16'	0.0033687	14 46.5	14 48.8	54 13.3	54 21'
5	163 3 39.0	0° 27'	0.0032562	14 51.7	14 55.3	54 32.4	54 45'
6	164 1 55.4	0° 36'	0.0031425	14 59.5	15 4.3	55 0.9	55 18'
7	165 0 13.4	0° 43'	0.0030277	15 9.8	15 15.8	55 38.6	56 0'
8	165 58 32.8	0° 47'	0.0029120	15 22.4	15 29.5	56 24.9	56 50'
9	166 56 53.7	0° 49'	0.0027956	15 36.9	15 44.6	57 18.1	57 46'
10	167 55 16.3	0° 48'	0.0026786	15 52.5	16 0.3	58 15.3	58 44'
11	168 53 40.5	0° 44'	0.0025610	16 8.0	16 15.4	59 12.4	59 39'
12	169 52 6.4	0° 36'	0.0024431	16 22.1	16 28.1	60 4.1	60 26'
13	170 50 34.1	0° 26'	0.0023249	16 33.2	16 37.2	60 44.9	60 59'
14	171 49 3.6	0° 15'	0.0022067	16 40.0	16 41.5	61 9.9	61 15'
15	172 47 34.9	S. 0° 02'	0.0020884	16 41.7	16 40.6	61 16.0	61 11'
16	173 46 8.3	N. 0° 13'	0.0019699	16 38.1	16 34.6	61 2.9	60 49'
17	174 44 43.6	0° 26'	0.0018513	16 30.0	16 24.5	60 33.0	60 12'
18	175 43 21.1	0° 39'	0.0017326	16 18.4	16 11.8	59 50.5	59 26'
19	176 42 0.7	0° 51'	0.0016137	16 4.8	15 57.7	59 0.6	58 34'
20	177 40 42.6	0° 59'	0.0014947	15 50.6	15 43.6	58 8.3	57 42'
21	178 39 26.8	0° 66'	0.0013754	15 36.7	15 30.3	57 17.6	56 53'
22	179 38 13.2	0° 70'	0.0012556	15 24.1	15 18.4	56 31.2	56 10'
23	180 37 1.8	0° 71'	0.0011354	15 13.0	15 8.2	55 50.6	55 32'
24	181 35 52.7	0° 69'	0.0010146	15 3.8	14 59.8	55 16.6	55 2'
25	182 34 45.9	0° 64'	0.0008932	14 56.3	14 53.1	54 49.1	54 37'
26	183 33 41.4	0° 56'	0.0007709	14 50.4	14 48.1	54 27.6	54 19'
27	184 32 39.0	0° 46'	0.0006478	14 46.2	14 44.6	54 12.0	54 6'
28	185 31 38.8	0° 34'	0.0005239	14 43.4	14 42.5	54 1.7	53 58'
29	186 30 40.6	0° 21'	0.0003993	14 42.0	14 41.8	53 56.6	53 56'
30	187 29 44.5	N. 0° 08'	0.0002739	14 42.0	14 42.6	53 56.8	53 58'
31	188 28 50.4	S. 0° 05'	0.0001479	14 43.6	14 45.0	54 2.6	54 7'

MEAN TIME.

		THE MOON'S									
Day of the Week.	Day of the Month.	Longitude.				Latitude.				Age.	Meridian
		Noon.		Midnight.		Noon.		Midnight.		Noon.	Passage.
		o	'	o	'	o	'	o	'	d	h m
Mon.	1	181	28 44'0	187	23 5'6	N.1	17 0'7	N.0	45 25'2	2'0	1 26'4
Tues.	2	193	16 33'9	199	9 32'7	N.0	13 23'0	S.0	18 47'2	3'0	2 5'2
Wed.	3	205	2 27'5	210	55 46'9	S.0	50 46'4	1	22 17'3	4'0	2 44'8
Thur.	4	216	50 1'3	222	45 43'0	1	53 1'6	2	22 41'3	5'0	3 26'1
Frid.	5	228	43 26'2	234	43 46'2	2	50 58'9	3	17 36'2	6'0	4 10'3
Sat.	6	240	47 19'4	246	54 42'2	3	42 15'8	4	4 39'2	7'0	4 58'0
Sun.	7	253	6 31'1	259	23 20'6	4	24 27'9	4	41 23'4	8'0	5 49'8
Mon.	8	265	45 43'8	272	14 10'3	4	55 6'7	5	5 19'3	9'0	6 45'2
Tues.	9	278	49 5'3	285	30 48'2	5	11 43'0	5	14 0'9	10'0	7 43'2
Wed.	10	292	19 31'6	299	15 19'3	5	11 58'1	5	5 22'1	11'0	8 41'8
Thur.	11	306	18 5'9	313	27 35'0	4	54 4'9	4	38 3'6	12'0	9 39'4
Frid.	12	320	43 19'4	328	4 40'8	4	17 21'3	3	52 8'5	13'0	10 34'8
Sat.	13	335	30 50'3	343	0 49'7	3	22 43'5	2	49 32'9	14'0	11 28'0
Sun.	14	350	33 34'0	358	7 53'5	2	13 11'2	1	34 19'3	15'0	12 19'8
Mon.	15	5	42 36'6	13	16 32'4	S.0	53 43'2	S.0	12 12'7	16'0	13 11'1
Tues.	16	20	48 33'0	28	17 38'2	N.0	29 21'4	N.1	10 10'6	17'0	14 3'3
Wed.	17	35	42 54'1	43	3 36'0	1	49 28'0	2	26 32'9	18'0	14 57'5
Thur.	18	50	19 8'7	57	29 7'7	3	0 49'0	3	31 48'0	19'0	15 54'0
Frid.	19	64	33 15'9	71	31 25'8	3	59 6'1	4	22 27'4	20'0	16 52'5
Sat.	20	78	23 37'2	85	9 55'8	4	41 40'9	4	56 40'9	21'0	17 51'7
Sun.	21	91	50 33'1	98	25 44'3	5	7 25'8	5	13 57'9	22'0	18 49'7
Mon.	22	104	55 47'5	111	21 3'2	5	16 22'2	5	14 45'9	23'0	19 44'6
Tues.	23	117	41 53'1	123	58 39'4	5	9 19'0	5	0 12'0	24'0	20 35'5
Wed.	24	130	11 44'1	136	21 29'2	4	47 37'7	4	31 49'4	25'0	21 22'4
Thur.	25	142	28 15'5	148	32 23'3	4	13 2'0	3	51 31'4	26'0	22 5'8
Frid.	26	154	34 11'7	160	33 58'8	3	27 32'4	3	1 23'3	27'0	22 46'6
Sat.	27	166	32 2'0	172	28 38'0	2	33 21'9	2	3 46'6	28'0	23 25'9
Sun.	28	178	24 3'0	184	18 3	32	55'5	N.1	1 8'6	29'0	♄
Mon.	29	190	12 22'7	196		45	0	S.0	3 55'6	0'3	0 4'7
Tues.	30	201	59 10'5			1	0	1	8 49'8	1'3	0 43'9
Wed.	31	213	46 45'					10	59'9	2'3	1 24'6

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>MONDAY 1.</i>				<i>WEDNESDAY 3.</i>			
0	h m s 12 7 28.21	N. 0 35 19.6	141.58	0	h m s 13 31 31.94	S. 10 29 18.9	
1	12 9 12.56	0 21 10.1	141.56	1	13 33 19.39	10 42 33.2	
2	12 10 56.87	N. 0 7 0.8	141.53	2	13 35 7.00	10 55 45.2	
3	12 12 41.16	S. 0 7 8.4	141.49	3	13 36 54.79	11 8 55.0	
4	12 14 25.42	0 21 17.4	141.45	4	13 38 42.74	11 22 2.4	
5	12 16 9.66	0 35 26.1	141.40	5	13 40 30.88	11 35 7.5	
6	12 17 53.89	0 49 34.5	141.34	6	13 42 19.19	11 48 10.2	
7	12 19 38.11	1 3 42.6	141.28	7	13 44 7.69	12 1 10.4	
8	12 21 22.32	1 17 50.3	141.21	8	13 45 56.38	12 14 8.2	
9	12 23 6.52	1 31 57.5	141.13	9	13 47 45.26	12 27 3.3	
10	12 24 50.73	1 46 4.3	141.04	10	13 49 34.34	12 39 55.9	
11	12 26 34.94	2 0 10.5	140.94	11	13 51 23.62	12 52 45.8	
12	12 28 19.16	2 14 16.2	140.84	12	13 53 13.10	13 5 33.1	
13	12 30 3.39	2 28 21.3	140.73	13	13 55 2.79	13 18 17.6	
14	12 31 47.65	2 42 25.7	140.62	14	13 56 52.70	13 30 59.3	
15	12 33 31.92	2 56 29.4	140.50	15	13 58 42.82	13 43 38.2	
16	12 35 16.22	3 10 32.4	140.37	16	14 0 33.16	13 56 14.2	
17	12 37 0.55	3 24 34.6	140.23	17	14 2 23.72	14 8 47.2	
18	12 38 44.91	3 38 36.0	140.08	18	14 4 14.52	14 21 17.3	
19	12 40 29.31	3 52 36.5	139.93	19	14 6 5.54	14 33 44.3	
20	12 42 13.75	4 6 36.1	139.77	20	14 7 56.80	14 46 8.2	
21	12 43 58.24	4 20 34.7	139.61	21	14 9 48.30	14 58 29.0	
22	12 45 42.78	4 34 32.4	139.43	22	14 11 40.04	15 10 46.6	
23	12 47 27.37	S. 4 48 29.0	139.25	23	14 13 32.03	S. 15 23 0.9	
<i>TUESDAY 2.</i>				<i>THURSDAY 4.</i>			
0	12 49 12.02	S. 5 2 24.5	139.07	0	14 15 24.28	S. 15 35 12.0	
1	12 50 56.73	5 16 18.9	138.87	1	14 17 16.78	15 47 19.7	
2	12 52 41.52	5 30 12.2	138.67	2	14 19 9.53	15 59 24.0	
3	12 54 26.37	5 44 4.2	138.46	3	14 21 2.55	16 11 24.9	
4	12 56 11.30	5 57 54.9	138.24	4	14 22 55.83	16 23 22.3	
5	12 57 56.31	6 11 44.4	138.02	5	14 24 49.38	16 35 16.1	
6	12 59 41.40	6 25 32.5	137.79	6	14 26 43.20	16 47 6.3	
7	13 1 26.57	6 39 19.3	137.55	7	14 28 37.30	16 58 52.8	
8	13 3 11.84	6 53 4.6	137.30	8	14 30 31.68	17 10 35.7	
9	13 4 57.21	7 6 48.4	137.05	9	14 32 26.34	17 22 14.7	
10	13 6 42.67	7 20 30.7	136.79	10	14 34 21.29	17 33 50.0	
11	13 8 28.24	7 34 11.5	136.52	11	14 36 16.52	17 45 21.4	
12	13 10 13.92	7 47 50.6	136.24	12	14 38 12.05	17 56 48.8	
13	13 11 59.71	8 1 28.1	135.96	13	14 40 7.88	18 8 12.3	
14	13 13 45.61	8 15 3.9	135.67	14	14 42 4.00	18 19 31.7	
15	13 15 31.64	8 28 37.9	135.38	15	14 44 0.43	18 30 47.0	
16	13 17 17.79	8 42 10.2	135.07	16	14 45 57.17	18 41 58.2	
17	13 19 4.07	8 55 40.6	134.76	17	14 47 54.22	18 53 5.2	
18	13 20 50.48	9 9 9.2	134.44	18	14 49 51.58	19 4 7.9	
19	13 22 37.02	9 22 35.8	134.12	19	14 51 49.26	19 15 6.2	
20	13 24 23.71	9 36 0.5	133.78	20	14 53 47.25	19 26 0.2	
21	13 26 10.54	9 49 23.2	133.44	21	14 55 45.57	19 36 49.7	
22	13 27 57.52	10 2 43.9	133.09	22	14 57 44.22	19 47 34.7	
23	13 29 44.65	10 16 2.5	132.74	23	14 59 43.19	19 58 15.2	
24	13 31 31.94	S. 10 29 18.9		24	15 1 42.49	S. 20 8 51.0	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>FRIDAY 5.</i>				<i>SUNDAY 7.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	15 1 42.49	S. 20 8 51.0	105.19	0	16 44 16.14	S. 26 45 50.4	54.84
1	15 3 42.13	20 19 22.1	104.39	1	16 46 33.56	26 51 19.5	53.51
2	15 5 42.10	20 29 48.5	103.59	2	16 48 51.34	26 56 40.5	52.17
3	15 7 42.41	20 40 10.0	102.78	3	16 51 9.48	27 1 53.6	50.82
4	15 9 43.07	20 50 26.7	101.96	4	16 53 27.98	27 6 58.5	49.45
5	15 11 44.07	21 0 38.5	101.12	5	16 55 46.84	27 11 55.2	48.08
6	15 13 45.41	21 10 45.2	100.28	6	16 58 6.06	27 16 43.7	46.69
7	15 15 47.11	21 20 46.5	99.43	7	17 0 25.62	27 21 23.8	45.29
8	15 17 49.15	21 30 43.5	98.57	8	17 2 45.54	27 25 55.6	43.89
9	15 19 51.55	21 40 34.9	97.69	9	17 5 5.80	27 30 18.9	42.47
10	15 21 54.31	21 50 21.1	96.81	10	17 7 26.41	27 34 33.7	41.04
11	15 23 57.42	22 0 1.9	95.91	11	17 9 47.36	27 38 39.9	39.59
12	15 26 0.89	22 9 37.4	95.01	12	17 12 8.63	27 42 37.5	38.14
13	15 28 4.72	22 19 7.5	94.09	13	17 14 30.24	27 46 26.4	36.68
14	15 30 8.92	22 28 32.0	93.16	14	17 16 52.19	27 50 6.4	35.21
15	15 32 13.49	22 37 51.0	92.22	15	17 19 14.45	27 53 37.7	33.72
16	15 34 18.42	22 47 4.4	91.27	16	17 21 37.04	27 57 0.0	32.22
17	15 36 23.73	22 56 12.0	90.31	17	17 23 59.94	28 0 13.3	30.72
18	15 38 29.40	23 5 13.9	89.34	18	17 26 23.16	28 3 17.7	29.20
19	15 40 35.45	23 14 10.0	88.36	19	17 28 46.68	28 6 12.9	27.68
20	15 42 41.87	23 23 0.1	87.36	20	17 31 10.50	28 8 59.0	26.15
21	15 44 48.67	23 31 44.3	86.36	21	17 33 34.62	28 11 35.9	24.60
22	15 46 55.84	23 40 22.5	85.34	22	17 35 59.03	28 14 3.5	23.05
23	15 49 3.40	S. 23 48 54.5	84.31	23	17 38 23.73	S. 28 16 21.8	21.49
<i>SATURDAY 6.</i>				<i>MONDAY 8.</i>			
0	15 51 11.33	S. 23 57 20.4	83.27	0	17 40 48.72	S. 28 18 30.7	19.91
1	15 53 19.64	24 5 40.0	82.22	1	17 43 13.98	28 20 30.2	18.33
2	15 55 28.33	24 13 53.4	81.16	2	17 45 39.52	28 22 20.2	16.74
3	15 57 37.40	24 22 0.3	80.08	3	17 48 5.32	28 24 0.6	15.14
4	15 59 46.86	24 30 0.8	79.00	4	17 50 31.37	28 25 31.4	13.53
5	16 1 56.70	24 37 54.8	77.90	5	17 52 57.69	28 26 52.6	11.91
6	16 4 6.92	24 45 42.2	76.79	6	17 55 24.25	28 28 4.1	10.29
7	16 6 17.52	24 53 23.0	75.67	7	17 57 51.06	28 29 5.8	8.65
8	16 8 28.51	25 0 57.0	74.54	8	18 0 18.10	28 29 57.8	7.01
9	16 10 39.88	25 8 24.2	73.40	9	18 2 45.37	28 30 39.9	5.36
10	16 12 51.63	25 15 44.6	72.24	10	18 5 12.86	28 31 12.1	3.71
11	16 15 3.77	25 22 58.1	71.07	11	18 7 40.58	28 31 34.3	2.04
12	16 17 16.29	25 30 4.5	69.90	12	18 10 8.50	28 31 46.6	0.37
13	16 19 29.20	25 37 3.9	68.71	13	18 12 36.63	28 31 48.8	1.30
14	16 21 42.48	25 43 56.1	67.50	14	18 15 4.96	28 31 41.0	2.99
15	16 23 56.15	25 50 41.2	66.29	15	18 17 32.48	28 31 23.1	4.68
16	16 26 10.20	25 57 18.9	65.07	16	18 20	28 30 55.0	6.38
17	16 28 24.63	26 3 49.3	63.83	17	18 22	28 30 16.8	8.08
18	16 30 39.44	26 10 12.3	62.58	18	18 25	28 29 28.3	9.79
19	16 32 54.62	26 16 27.8	61.32	19	18 27	28 28 29.6	11.50
20	16 35 10.18	26 22 35.7	60.05	20	18 29	28 27 20.6	13.1
21	16 37 26.11	26 28 36.0	58.76	21	18 31	28 26 1.3	
22	16 39 42.42	26 34 28.6	57.47	22	18 33	28 24 31.6	
23	16 41 59.09	26 40 13.4	56.16	23	18 35	28 22 51.6	
24	16 44 16.14	S. 26 45 50.4		24	18 37	28 21 1.2	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 100.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 100.
<i>TUESDAY 9.</i>				<i>THURSDAY 11.</i>			
0	18 39 57.59	S. 28 21 1.2	20.44	0	20 40 3.95	S. 23 27 23.3	104.7
1	18 42 27.64	28 19 0.4	21.88	1	20 42 31.70	23 17 7.1	104.7
2	18 44 57.79	28 16 49.1	23.62	2	20 44 59.27	23 6 41.3	105.8
3	18 47 28.05	28 14 27.3	25.57	3	20 47 26.66	22 56 6.2	107.4
4	18 49 58.41	28 11 55.1	27.12	4	20 49 53.85	22 45 21.6	108.9
5	18 52 28.86	28 9 12.3	28.88	5	20 52 20.86	22 34 27.8	110.5
6	18 54 59.39	28 6 19.1	30.63	6	20 54 47.67	22 23 24.7	111.9
7	18 57 30.00	28 3 15.3	32.39	7	20 57 14.29	22 12 12.5	113.5
8	19 0 0.68	28 0 0.9	34.15	8	20 59 40.71	22 0 51.2	115.0
9	19 2 31.41	27 56 36.0	35.91	9	21 2 6.93	21 49 20.8	116.5
10	19 5 2.20	27 53 0.5	37.68	10	21 4 32.94	21 37 41.5	118.1
11	19 7 33.04	27 49 14.4	39.44	11	21 6 58.74	21 25 53.3	119.7
12	19 10 3.91	27 45 17.8	41.21	12	21 9 24.34	21 13 56.3	120.7
13	19 12 34.82	27 41 10.6	42.97	13	21 11 49.73	21 1 50.6	122.1
14	19 15 5.75	27 36 52.7	44.74	14	21 14 14.91	20 49 36.2	123.1
15	19 17 36.69	27 32 24.3	46.50	15	21 16 39.87	20 37 13.2	123.5
16	19 20 7.65	27 27 45.3	48.27	16	21 19 4.62	20 24 41.7	126
17	19 22 38.61	27 22 55.6	50.03	17	21 21 29.16	20 12 1.9	128
18	19 25 9.56	27 17 55.4	51.80	18	21 23 53.48	19 59 13.7	129
19	19 27 40.50	27 12 44.6	53.56	19	21 26 17.59	19 46 17.2	130
20	19 30 11.43	27 7 23.3	55.32	20	21 28 41.48	19 33 12.7	132
21	19 32 42.33	27 1 51.4	57.08	21	21 31 5.15	19 20 0.0	133
22	19 35 13.19	26 56 8.9	58.83	22	21 33 28.60	19 6 39.4	134
23	19 37 44.02	S. 26 50 15.9	60.59	23	21 35 51.83	S. 18 53 10.8	136
<i>WEDNESDAY 10.</i>				<i>FRIDAY 12.</i>			
0	19 40 14.80	S. 26 44 12.4	62.34	0	21 38 14.84	S. 18 39 34.5	137
1	19 42 45.53	26 37 58.4	64.09	1	21 40 37.63	18 25 50.5	138
2	19 45 16.19	26 31 33.8	65.83	2	21 43 0.21	18 11 58.8	139
3	19 47 46.79	26 24 58.9	67.57	3	21 45 22.56	17 57 59.7	141
4	19 50 17.32	26 18 13.4	69.31	4	21 47 44.70	17 43 53.1	142
5	19 52 47.77	26 11 17.6	71.04	5	21 50 6.61	17 29 39.2	143
6	19 55 18.14	26 4 11.4	72.77	6	21 52 28.31	17 15 18.0	144
7	19 57 48.41	25 56 54.8	74.49	7	21 54 49.80	17 0 49.7	145
8	20 0 18.59	25 49 27.9	76.20	8	21 57 11.07	16 46 14.4	147
9	20 2 48.67	25 41 50.6	77.91	9	21 59 32.12	16 31 32.1	148
10	20 5 18.64	25 34 3.1	79.62	10	22 1 52.97	16 16 43.0	149
11	20 7 48.49	25 26 5.4	81.32	11	22 4 13.60	16 1 47.2	150
12	20 10 18.22	25 17 57.5	83.01	12	22 6 34.02	15 46 44.7	151
13	20 12 47.83	25 9 39.4	84.70	13	22 8 54.23	15 31 35.7	152
14	20 15 17.31	25 1 11.2	86.38	14	22 11 14.23	15 16 20.3	153
15	20 17 46.66	24 52 33.0	88.05	15	22 13 34.03	15 0 58.5	154
16	20 20 15.87	24 43 44.7	89.71	16	22 15 53.62	14 45 30.5	155
17	20 22 44.93	24 34 46.4	91.37	17	22 18 13.01	14 29 56.4	156
18	20 25 13.84	24 25 38.2	93.01	18	22 20 32.21	14 14 16.3	157
19	20 27 42.60	24 16 20.1	94.65	19	22 22 51.20	13 58 30.4	158
20	20 30 11.20	24 6 52.2	96.28	20	22 25 10.00	13 42 38.6	159
21	20 32 39.64	23 57 14.5	97.90	21	22 27 28.61	13 26 41.1	160
22	20 35 7.92	23 47 27.1	99.51	22	22 29 47.02	13 10 38.1	161
23	20 37 36.02	23 37 30.0	101.11	23	22 32 5.25	12 54 29.7	162
24	20 40 3.95	S. 23 27 23.3		24	22 34 23.29	S. 12 38 15.9	

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SATURDAY 13.</i>				<i>MONDAY 15.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	22 34 23.29	S. 12 38 15.9	163.17	0	0 22 23.03	N. 1 26 53.3	181.54
1	22 36 41.15	12 21 56.9	164.02	1	0 24 36.73	1 45 2.6	181.42
2	22 38 58.83	12 5 32.7	164.86	2	0 26 50.45	2 3 11.1	181.28
3	22 41 16.34	11 49 3.6	165.67	3	0 29 4.21	2 21 18.8	181.11
4	22 43 33.67	11 32 29.6	166.46	4	0 31 18.00	2 39 25.4	180.93
5	22 45 50.83	11 15 50.8	167.24	5	0 33 31.82	2 57 31.0	180.72
6	22 48 7.82	10 59 7.3	168.00	6	0 35 45.69	3 15 35.4	180.50
7	22 50 24.65	10 42 19.3	168.74	7	0 37 59.61	3 33 38.4	180.25
8	22 52 41.33	10 25 26.9	169.46	8	0 40 13.59	3 51 39.9	179.98
9	22 54 57.84	10 8 30.2	170.15	9	0 42 27.62	4 9 39.8	179.70
10	22 57 14.20	9 51 29.2	170.83	10	0 44 41.71	4 27 38.0	179.39
11	22 59 30.41	9 34 24.2	171.49	11	0 46 55.87	4 45 34.3	179.06
12	23 1 46.47	9 17 15.3	172.13	12	0 49 10.10	5 3 28.7	178.71
13	23 4 2.39	9 0 2.5	172.75	13	0 51 24.41	5 21 21.0	178.34
14	23 6 18.18	8 42 46.0	173.35	14	0 53 38.80	5 39 11.0	177.95
15	23 8 33.83	8 25 25.9	173.93	15	0 55 53.28	5 56 58.7	177.54
16	23 10 49.35	8 8 2.4	174.49	16	0 58 7.85	6 14 43.9	177.11
17	23 13 4.74	7 50 35.5	175.02	17	1 0 22.51	6 32 26.6	176.66
18	23 15 20.01	7 33 5.3	175.54	18	1 2 37.27	6 50 6.6	176.19
19	23 17 35.16	7 15 32.0	176.04	19	1 4 52.14	7 7 43.7	175.70
20	23 19 50.120	6 57 55.8	176.52	20	1 7 7.12	7 25 17.9	175.19
21	23 22 5.13	6 40 16.7	176.98	21	1 9 22.21	7 42 49.1	174.66
22	23 24 19.95	6 22 34.8	177.42	22	1 11 37.41	8 0 17.1	174.12
23	23 26 34.67	S. 6 4 50.3	177.83	23	1 13 52.73	N. 8 17 41.8	173.55
<i>SUNDAY 14.</i>				<i>TUESDAY 16.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	23 28 49.29	S. 5 47 3.3	178.23	0	1 16 8.18	N. 8 35 3.1	172.96
1	23 31 3.82	5 29 13.9	178.60	1	1 18 23.76	8 52 20.9	172.36
2	23 33 18.27	5 11 22.3	178.96	2	1 20 39.48	9 9 35.1	171.73
3	23 35 32.63	4 53 28.6	179.29	3	1 22 55.34	9 26 45.4	171.08
4	23 37 46.91	4 35 32.8	179.61	4	1 25 11.34	9 43 52.0	170.42
5	23 40 1.11	4 17 35.1	179.90	5	1 27 27.48	10 0 54.5	169.73
6	23 42 15.25	3 59 35.7	180.17	6	1 29 43.77	10 17 52.9	169.03
7	23 44 29.32	3 41 34.7	180.43	7	1 32 0.22	10 34 47.0	168.30
8	23 46 43.33	3 23 32.1	180.66	8	1 34 16.83	10 51 36.8	167.56
9	23 48 57.28	3 5 28.2	180.87	9	1 36 33.60	11 8 22.2	166.80
10	23 51 11.18	2 47 22.9	181.06	10	1 38 50.53	11 25 3.0	166.02
11	23 53 25.04	2 29 16.6	181.23	11	1 41 7.63	11 41 39.1	165.22
12	23 55 38.85	2 11 9.2	181.38	12	1 43 24.91	11 58 10.4	164.39
13	23 57 52.62	1 53 0.9	181.51	13	1 45 42.36	12 14 36.8	163.55
14	0 0 6.36	1 34 51.9	181.61	14	1 47 59.99	12 30 58.1	162.70
15	0 2 20.07	1 16 42.2	181.70	15	1 50 17.80	12 47 14.3	161.82
16	0 4 33.77	0 58 32.0	181.77	16	1 52 35.79	13 3 25.2	160.93
17	0 6 47.44	0 40 21.4	181.81	17	1 54 53.97	13 19 30.8	160.02
18	0 9 1.09	0 22 10.5	181.83	18	1 57 12.35	13 35 30.9	159.09
19	0 11 14.74	S. 0 3 59.5	181.84	19	1 59 30.92	13 51 25.5	158.14
20	0 13 28.39	N. 0 14 11.5	181.82	20	2 1 49.68	14 7 14.3	157.18
21	0 15 42.04	0 32 22.4	181.78	21	2 4 8.65	14 22 57.4	156.20
22	0 17 55.69	0 50 33.1	181.72	22	2 6 27.82	14 38 34.6	155.20
23	0 20 9.35	1 8 43.4	181.64	23	2 8 47.19	14 54 5.8	154.18
24	0 22 23.03	N. 1 26 53.3		24	2 11 6.77	N. 15 9 30.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
<i>WEDNESDAY 17.</i>				<i>FRIDAY 19.</i>		
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>
0	2 11 6.77	N.15 9 30.8	153.14	0	4 7 7.07	N.24 59 5.8
1	2 13 26.56	15 24 49.7	152.09	1	4 9 37.12	25 7 41.8
2	2 15 46.56	15 40 2.2	151.02	2	4 12 7.33	25 16 7.6
3	2 18 6.77	15 55 8.4	149.93	3	4 14 37.69	25 24 23.3
4	2 20 27.20	16 10 8.0	148.83	4	4 17 8.20	25 32 28.8
5	2 22 47.85	16 25 1.0	147.71	5	4 19 38.85	25 40 24.1
6	2 25 8.71	16 39 47.2	146.57	6	4 22 9.64	25 48 9.1
7	2 27 29.80	16 54 26.7	145.42	7	4 24 40.57	25 55 43.8
8	2 29 51.11	17 8 59.2	144.25	8	4 27 11.62	26 3 8.2
9	2 32 12.65	17 23 24.6	143.06	9	4 29 42.79	26 10 22.2
10	2 34 34.41	17 37 43.0	141.86	10	4 32 14.07	26 17 25.7
11	2 36 56.39	17 51 54.2	140.64	11	4 34 45.47	26 24 18.8
12	2 39 18.61	18 5 58.0	139.40	12	4 37 16.97	26 31 1.4
13	2 41 41.05	18 19 54.4	138.15	13	4 39 48.57	26 37 33.5
14	2 44 3.72	18 33 43.3	136.88	14	4 42 20.26	26 43 55.0
15	2 46 26.63	18 47 24.6	135.60	15	4 44 52.03	26 50 6.0
16	2 48 49.76	19 0 58.3	134.31	16	4 47 23.88	26 56 6.3
17	2 51 13.12	19 14 24.1	133.00	17	4 49 55.80	27 1 56.1
18	2 53 36.72	19 27 42.1	131.67	18	4 52 27.79	27 7 35.2
19	2 56 0.54	19 40 52.1	130.33	19	4 54 59.84	27 13 3.7
20	2 58 24.60	19 53 54.1	128.98	20	4 57 31.94	27 18 21.5
21	3 0 48.89	20 6 48.0	127.61	21	5 0 4.08	27 23 28.6
22	3 3 13.41	20 19 33.7	126.23	22	5 2 36.25	27 28 25.0
23	3 5 38.15	N.20 32 11.0	124.83	23	5 5 8.46	N.27 33 10.7
<i>THURSDAY 18.</i>				<i>SATURDAY 20.</i>		
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>
0	3 8 3.13	N.20 44 40.0	123.43	0	5 7 40.69	N.27 37 45.7
1	3 10 28.34	20 57 0.6	122.00	1	5 10 12.94	27 42 10.0
2	3 12 53.78	21 9 12.6	120.56	2	5 12 45.19	27 46 23.5
3	3 15 19.44	21 21 16.0	119.11	3	5 15 17.44	27 50 26.3
4	3 17 45.33	21 33 10.7	117.65	4	5 17 49.69	27 54 18.3
5	3 20 11.44	21 44 56.6	116.18	5	5 20 21.92	27 57 59.6
6	3 22 37.77	21 56 33.6	114.69	6	5 22 54.13	28 1 30.2
7	3 25 4.33	22 8 1.8	113.18	7	5 25 26.31	28 4 50.0
8	3 27 31.10	22 19 20.9	111.67	8	5 27 58.46	28 7 59.1
9	3 29 58.09	22 30 30.9	110.15	9	5 30 30.56	28 10 57.5
10	3 32 25.30	22 41 31.8	108.61	10	5 33 2.61	28 13 45.2
11	3 34 52.71	22 52 23.4	107.06	11	5 35 34.59	28 16 22.1
12	3 37 20.34	23 3 5.8	105.49	12	5 38 6.51	28 18 48.4
13	3 39 48.18	23 13 38.8	103.92	13	5 40 38.36	28 21 4.0
14	3 42 16.21	23 24 2.3	102.34	14	5 43 10.12	28 23 8.9
15	3 44 44.45	23 34 16.4	100.75	15	5 45 41.80	28 25 3.1
16	3 47 12.89	23 44 20.8	99.15	16	5 48 13.38	28 26 46.8
17	3 49 41.52	23 54 15.7	97.53	17	5 50 44.85	28 28 19.8
18	3 52 10.34	24 4 0.9	95.91	18	5 53 16.20	28 29 42.2
19	3 54 39.35	24 13 36.4	94.28	19	5 55 47.44	28 30 54.1
20	3 57 8.54	24 23 2.1	92.64	20	5 58 18.55	28 31 55.5
21	3 59 37.91	24 32 17.9	90.99	21	6 0 49.52	28 32 46.3
22	4 2 7.46	24 41 23.8	89.33	22	6 3 20.35	28 33 26.6
23	4 4 37.18	24 50 19.8	87.66	23	6 5 51.03	28 33 56.5
24	4 7 7.07	N.24 59 5.8		24	6 8 21.54	N.28 34 16.0

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SUNDAY 21.</i>				<i>TUESDAY 23.</i>			
0	h m s 6 8 21.54	N.28 34 16.0	" 1.51	0	h m s 8 3 38.71	N.25 41 23.4	" 71.14
1	6 10 51.89	28 34 25.1	0.21	1	8 5 54.52	25 34 16.6	72.38
2	6 13 22.08	28 34 23.8	1.93	2	8 8 9.94	25 27 2.3	73.61
3	6 15 52.08	28 34 12.2	3.64	3	8 10 24.97	25 19 40.6	74.83
4	6 18 21.89	28 33 50.3	5.35	4	8 12 39.61	25 12 11.6	76.03
5	6 20 51.51	28 33 18.2	7.05	5	8 14 53.86	25 4 35.4	77.22
6	6 23 20.93	28 32 35.9	8.74	6	8 17 7.72	24 56 52.1	78.40
7	6 25 50.13	28 31 43.5	10.43	7	8 19 21.19	24 49 1.7	79.57
8	6 28 19.13	28 30 40.9	12.10	8	8 21 34.28	24 41 4.3	80.72
9	6 30 47.90	28 29 28.3	13.77	9	8 23 46.97	24 32 59.9	81.86
10	6 33 16.44	28 28 5.7	15.44	10	8 25 59.26	24 24 48.7	82.99
11	6 35 44.75	28 26 33.0	17.09	11	8 28 11.17	24 16 30.8	84.11
12	6 38 12.81	28 24 50.5	18.73	12	8 30 22.68	24 8 6.1	85.22
13	6 40 40.63	28 22 58.1	20.37	13	8 32 33.80	23 59 34.8	86.31
14	6 43 8.19	28 20 55.9	22.00	14	8 34 44.53	23 50 57.0	87.39
15	6 45 35.50	28 18 43.8	23.62	15	8 36 54.87	23 42 12.6	88.46
16	6 48 2.54	28 16 22.1	25.23	16	8 39 4.81	23 33 21.9	89.51
17	6 50 29.31	28 13 50.8	26.83	17	8 41 14.37	23 24 24.8	90.55
18	6 52 55.80	28 11 9.8	28.42	18	8 43 23.54	23 15 21.5	91.58
19	6 55 22.01	28 8 19.2	30.00	19	8 45 32.32	23 6 12.0	92.60
20	6 57 47.93	28 5 19.2	31.58	20	8 47 40.72	22 56 56.4	93.61
21	7 0 13.55	28 2 9.7	33.14	21	8 49 48.73	22 47 34.7	94.61
22	7 2 38.87	27 58 50.9	34.69	22	8 51 56.35	22 38 7.1	95.59
23	7 5 3.89	N.27 55 22.7	36.23	23	8 54 3.59	N.22 28 33.6	96.56
<i>MONDAY 22.</i>				<i>WEDNESDAY 24.</i>			
0	7 7 28.60	N.27 51 45.3	37.77	0	8 56 10.45	N.22 18 54.2	97.52
1	7 9 53.00	27 47 58.7	39.29	1	8 58 16.93	22 9 9.1	98.46
2	7 12 17.08	27 44 2.9	40.80	2	9 0 23.03	21 59 18.3	99.40
3	7 14 40.84	27 39 58.1	42.30	3	9 2 28.75	21 49 21.9	100.32
4	7 17 4.27	27 35 44.3	43.79	4	9 4 34.09	21 39 20.0	101.23
5	7 19 27.37	27 31 21.6	45.27	5	9 6 39.06	21 29 12.6	102.13
6	7 21 50.13	27 26 50.0	46.73	6	9 8 43.66	21 18 59.8	103.02
7	7 24 12.55	27 22 9.6	48.19	7	9 10 47.89	21 8 41.7	103.90
8	7 26 34.63	27 17 20.4	49.63	8	9 12 51.75	20 58 18.3	104.76
9	7 28 56.37	27 12 22.6	51.07	9	9 14 55.24	20 47 49.8	105.61
10	7 31 17.75	27 7 16.2	52.49	10	9 16 58.37	20 37 16.1	106.45
11	7 33 38.78	27 2 1.3	53.90	11	9 19 1.14	20 26 37.4	107.28
12	7 35 59.45	26 56 37.9	55.30	12	9 21 3.55	20 15 53.7	108.10
13	7 38 19.76	26 51 6.1	56.68	13	9 23 5.60	20 5 5.1	108.91
14	7 40 39.71	26 45 26.0	58.05	14	9 25 7.30	19 54 11.7	109.70
15	7 42 59.30	26 39 37.7	59.42	15	9 27 8.64	19 43 13.5	110.48
16	7 45 18.51	26 33 41.2	60.77	16	9 29 9.64	19 32 10.6	111.25
17	7 47 37.36	26 27 36.6	62.11	17	9 31 10.29	19 21 3.0	112.02
18	7 49 55.83	26 21 23.9	63.44	18	9 33 10.59	19 9 50.9	112.77
19	7 52 13.92	26 15 3.3	64.75	19	9 35 10.55	18 58 34.3	113.51
20	7 54 31.64	26 8 34.8	66.05	20	9 37 10.18	18 47 13.3	114.23
21	7 56 48.98	26 1 58.5	67.34	21	9 39 9.47	18 35 47.9	114.95
22	7 59 5.94	25 55 14.4	68.62	22	9 41 8.42	18 24 18.2	115.66
23	8 1 22.52	25 48 22.7	69.89	23	9 43 7.05	18 12 44.2	116.35
24	8 3 38.71	N.25 41 23.4		24	9 45 5.35	N.18 1 6.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>THURSDAY 25.</i>				<i>SATURDAY 27.</i>			
0	9 45 5'35	N. 18 1 6'1	117'03	0	11 14 27'33	N. 7 40 24'7	138'43
1	9 47 3'33	17 49 23'9	117'71	1	11 16 13'98	7 26 34'0	138'68
2	9 49 0'98	17 37 37'7	118'37	2	11 18 0'48	7 12 41'9	138'90
3	9 50 58'32	17 25 47'4	119'02	3	11 19 46'85	6 58 48'5	139'13
4	9 52 55'35	17 13 53'3	119'67	4	11 21 33'08	6 44 53'8	139'32
5	9 54 52'06	17 1 55'3	120'30	5	11 23 19'19	6 30 57'9	139'57
6	9 56 48'47	16 49 53'5	120'92	6	11 25 5'17	6 17 0'8	139'75
7	9 58 44'57	16 37 48'0	121'53	7	11 26 51'02	6 3 2'6	139'88
8	10 0 40'37	16 25 38'8	122'14	8	11 28 36'76	5 49 3'3	140'65
9	10 2 35'87	16 13 25'9	122'73	9	11 30 22'39	5 35 3'0	140'21
10	10 4 31'08	16 1 9'6	123'31	10	11 32 7'91	5 21 1'7	140'37
11	10 6 26'00	15 48 49'7	123'88	11	11 33 53'32	5 6 59'5	140'52
12	10 8 20'63	15 36 26'4	124'45	12	11 35 38'63	4 52 56'4	140'66
13	10 10 14'98	15 23 59'7	125'00	13	11 37 23'84	4 38 52'4	140'79
14	10 12 9'04	15 11 29'7	125'54	14	11 39 8'97	4 24 47'7	140'82
15	10 14 2'83	14 58 56'4	126'08	15	11 40 54'00	4 10 42'2	141'03
16	10 15 56'35	14 46 19'9	126'60	16	11 42 38'95	3 56 36'0	141'14
17	10 17 49'60	14 33 40'3	127'11	17	11 44 23'81	3 42 29'1	141'24
18	10 19 42'58	14 20 57'6	127'62	18	11 46 8'60	3 28 21'7	141'34
19	10 21 35'30	14 8 11'9	128'11	19	11 47 53'32	3 14 13'6	141'41
20	10 23 27'76	13 55 23'3	128'59	20	11 49 37'96	3 0 5'1	141'50
21	10 25 19'96	13 42 31'7	129'07	21	11 51 22'54	2 45 56'1	141'57
22	10 27 11'92	13 29 37'3	129'53	22	11 53 7'06	2 31 46'7	141'63
23	10 29 3'63	N. 13 16 40'1	129'99	23	11 54 51'52	N. 2 17 36'8	141'69
<i>FRIDAY 26.</i>				<i>SUNDAY 28.</i>			
0	10 30 55'10	N. 13 3 40'2	130'43	0	11 56 35'93	N. 2 3 26'7	141'74
1	10 32 46'33	12 50 37'6	130'86	1	11 58 20'29	1 49 16'3	141'78
2	10 34 37'32	12 37 32'4	131'29	2	12 0 4'60	1 35 5'6	141'81
3	10 36 28'08	12 24 24'7	131'71	3	12 1 48'87	1 20 54'8	141'83
4	10 38 18'61	12 11 14'4	132'12	4	12 3 33'11	1 6 43'7	141'85
5	10 40 8'92	11 58 1'7	132'52	5	12 5 17'31	0 52 32'6	141'86
6	10 41 59'01	11 44 46'6	132'91	6	12 7 1'48	0 38 21'5	141'86
7	10 43 48'88	11 31 29'1	133'29	7	12 8 45'62	0 24 10'3	141'85
8	10 45 38'53	11 18 9'4	133'66	8	12 10 29'75	N. 0 9 59'2	141'84
9	10 47 27'98	11 4 47'4	134'03	9	12 12 13'85	S. 0 4 11'8	141'82
10	10 49 17'23	10 51 23'3	134'38	10	12 13 57'95	0 18 22'8	141'79
11	10 51 6'27	10 37 57'0	134'73	11	12 15 42'03	0 32 33'5	141'75
12	10 52 55'11	10 24 28'6	135'07	12	12 17 26'11	0 46 44'0	141'71
13	10 54 43'76	10 10 58'2	135'40	13	12 19 10'19	1 0 54'2	141'66
14	10 56 32'23	9 57 25'8	135'72	14	12 20 54'26	1 15 4'2	141'60
15	10 58 20'51	9 43 51'5	136'03	15	12 22 38'35	1 29 13'7	141'55
16	11 0 8'60	9 30 15'3	136'33	16	12 24 22'45	1 43 22'9	141'45
17	11 1 56'52	9 16 37'3	136'63	17	12 26 6'55	1 57 31'6	141'37
18	11 3 44'27	9 2 57'6	136'91	18	12 27 50'68	2 11 39'9	141'28
19	11 5 31'85	8 49 16'1	137'19	19	12 29 34'83	2 25 47'6	141'18
20	11 7 19'26	8 35 32'9	137'46	20	12 31 19'01	2 39 54'7	141'08
21	11 9 6'51	8 21 48'2	137'72	21	12 33 3'21	2 54 1'2	140'97
22	11 10 53'60	8 8 1'9	137'97	22	12 34 47'45	3 8 7'0	140'85
23	11 12 40'54	7 54 14'0	138'22	23	12 36 31'73	3 22 12'1	140'72
24	11 14 27'33	N. 7 40 24'7		24	12 38 16'04	S. 3 36 16'4	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
MONDAY 29.				TUESDAY 30.			
	h m s	° ' "	"		h m s	° ' "	"
0	12 38 16.04	S. 3 36 16.4	140.59	0	13 20 22.25	S. 9 8 13.7	135.07
1	12 40 0.40	3 50 19.9	140.45	1	13 22 8.87	9 21 44.1	134.74
2	12 41 44.82	4 4 22.6	140.30	2	13 23 55.63	9 35 12.5	134.40
3	12 43 29.28	4 18 24.4	140.14	3	13 25 42.53	9 48 38.9	134.06
4	12 45 13.80	4 32 25.2	139.97	4	13 27 29.58	10 2 3.3	133.71
5	12 46 58.39	4 46 25.0	139.80	5	13 29 16.79	10 15 25.5	133.35
6	12 48 43.04	5 0 23.9	139.62	6	13 31 4.15	10 28 45.6	132.98
7	12 50 27.75	5 14 21.6	139.43	7	13 32 51.67	10 42 3.5	132.60
8	12 52 12.54	5 28 18.2	139.24	8	13 34 39.36	10 55 19.1	132.22
9	12 53 57.41	5 42 13.6	139.04	9	13 36 27.21	11 8 32.5	131.83
10	12 55 42.36	5 56 7.9	138.83	10	13 38 15.23	11 21 43.5	131.43
11	12 57 27.39	6 10 0.8	138.61	11	13 40 3.43	11 34 52.1	131.02
12	12 59 12.51	6 23 52.5	138.39	12	13 41 51.80	11 47 58.2	130.61
13	13 0 57.72	6 37 42.8	138.15	13	13 43 40.36	12 1 1.9	130.19
14	13 2 43.03	6 51 31.8	137.91	14	13 45 29.10	12 14 3.0	129.76
15	13 4 28.44	7 5 19.2	137.66	15	13 47 18.03	12 27 1.5	129.32
16	13 6 13.96	7 19 5.2	137.41	16	13 49 7.16	12 39 57.4	128.87
17	13 7 59.58	7 32 49.7	137.14	17	13 50 56.48	12 52 50.6	128.41
18	13 9 45.31	7 46 32.5	136.87	18	13 52 46.00	13 5 41.1	127.94
19	13 11 31.16	8 0 13.7	136.59	19	13 54 35.72	13 18 28.7	127.47
20	13 13 17.12	8 13 53.3	136.30	20	13 56 25.65	13 31 13.5	126.99
21	13 15 3.21	8 27 31.1	136.00	21	13 58 15.79	13 43 55.5	126.49
22	13 16 49.43	8 41 7.1	135.70	22	14 0 6.15	13 56 34.4	125.99
23	13 18 35.77	8 54 41.3	135.39	23	14 1 56.72	14 9 10.4	125.48
24	13 20 22.25	S. 9 8 13.7		24	14 3 47.50	S. 14 21 43.3	

PHASES OF THE MOON.

	d	h	m
☾ First Quarter	-	-	7 3 56.7
☉ Full Moon	-	-	14 2 8.0
☾ Last Quarter	-	-	20 17 48.0
☾ New Moon	-	-	28 15 47.7

	d	h
☾ Apogee	-	2 3
☾ Perigee	-	14 20
☾ Apogee	-	29 11

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .			P.L. of diff.
		°	'	"	°	'	"	°	'	"	°	'	"	
1	SUN W.	22	20	1	23	40	56	25	1	52	26	22	49	3471
	Mars E.	48	10	17	46	46	12	45	22	10	43	58	13	3312
	Antares E.	66	28	41	64	59	40	63	30	43	62	1	49	3064
2	SUN W.	33	7	37	34	28	35	35	49	34	37	10	33	3471
	Mars E.	36	59	17	35	35	38	34	12	1	32	48	26	3331
	Antares E.	54	38	5	53	9	27	51	40	50	50	12	15	3079
	α Aquilæ E.	104	12	35	103	0	25	101	48	5	100	35	37	3951
3	SUN W.	43	55	40	45	16	46	46	37	55	47	59	6	3458
	Antares E.	42	49	20	41	20	44	39	52	5	38	23	25	3075
	α Aquilæ E.	94	31	34	93	18	30	92	5	22	90	52	11	3909
4	SUN W.	54	45	56	56	7	32	57	29	13	58	51	0	3426
	Spica ♀ W.	14	59	23	16	28	0	17	56	47	19	25	42	3063
	Antares E.	30	59	18	29	30	17	28	1	11	26	31	58	3054
	α Aquilæ E.	84	45	47	83	32	28	82	19	11	81	5	55	3904
5	SUN W.	65	41	43	67	4	16	68	26	59	69	49	52	3386
	Spica ♀ W.	26	52	29	28	22	18	29	52	17	31	22	27	3002
	α Aquilæ E.	75	0	20	73	47	27	72	34	41	71	22	3	3941
	Fomalhaut E.	101	9	50	99	44	9	98	18	17	96	52	14	3224
6	SUN W.	76	47	5	78	11	10	79	35	28	81	0	0	3306
	Spica ♀ W.	38	56	9	40	27	31	41	59	8	43	30	59	2945
	α Aquilæ E.	65	21	28	64	10	1	62	58	52	61	48	2	4031
	Fomalhaut E.	89	39	4	88	11	49	86	44	21	85	16	41	3134
	α Pegasi E.	110	44	49	109	20	36	107	56	3	106	31	10	3281
7	SUN W.	88	6	38	89	32	48	90	59	17	92	26	4	3183
	Spica ♀ W.	51	14	11	52	47	40	54	21	28	55	55	35	2831
	Mars W.	19	48	30	21	16	43	22	45	17	24	14	11	3080
	α Aquilæ E.	55	59	58	54	51	54	53	44	27	52	37	43	4263
	Fomalhaut E.	77	55	1	76	26	0	74	56	45	73	27	17	3047
	α Pegasi E.	99	21	44	97	54	51	96	27	39	95	0	7	3148
	Jupiter E.	113	20	27	111	46	3	110	11	21	108	36	20	2789
8	SUN W.	99	45	0	101	13	51	102	43	4	104	12	39	3048
	Spica ♀ W.	63	51	8	65	27	18	67	3	50	68	40	46	2706
	Mars W.	31	44	3	33	15	7	34	46	35	36	18	25	2940
	Antares W.	17	56	39	19	32	50	21	9	24	22	46	20	2705
	Fomalhaut E.	65	56	31	64	25	42	62	54	41	61	23	28	2961
	α Pegasi E.	87	37	29	86	7	59	84	38	10	83	8	2	3019
	Jupiter E.	100	36	15	98	59	10	97	21	43	95	43	53	2665
9	SUN W.	111	46	32	113	18	32	114	50	57	116	23	48	2895
	Spica ♀ W.	76	51	18	78	30	39	80	10	25	81	50	36	2563
	Mars W.	44	3	38	45	37	55	47	12	38	48	47	46	2789
	Antares W.	30	57	0	32	36	22	34	16	9	35	56	22	2562
	Fomalhaut E.	53	44	50	52	12	44	50	40	34	49	8	21	2907
	α Pegasi E.	75	32	45	74	0	48	72	28	36	70	56	8	2905
	Jupiter E.	87	28	46	85	48	31	84	7	50	82	26	43	2523
10	SUN W.	124	14	35	125	50	3	127	25	59	129	2	21	2733

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			P.L. of diff.			XV ^h .			P.L. of diff.			XVIII ^h .			P.L. of diff.			XXI ^h .			P.L. of diff.		
		o	i	"				o	i	"				o	i	"				o	i	"			
1	SUN W.	27	43	46	3470	29	4	44	3470	30	25	42	3471	31	46	39	3470								
	Mars E.	42	34	19	3319	41	10	29	3321	39	46	42	3324	38	22	58	3326								
	Antares E.	60	32	59	3069	59	4	12	3071	57	35	27	3073	56	6	45	3075								
2	SUN W.	38	31	32	3468	39	52	32	3467	41	13	33	3465	42	34	36	3464								
	Mars E.	31	24	52	3334	30	1	20	3334	28	37	48	3336	27	14	18	3336								
	Antares E.	48	43	40	3079	47	15	5	3080	45	46	31	3079	44	17	56	3078								
	α Aquilæ E.	99	23	1	3936	98	10	18	3930	96	57	29	3924	95	44	34	3919								
3	SUN W.	49	20	20	3452	50	41	38	3448	52	3	0	3445	53	24	26	3441								
	Antares E.	36	54	42	3071	35	25	57	3068	33	57	8	3064	32	28	15	3061								
	α Aquilæ E.	89	38	57	3904	88	25	41	3903	87	12	24	3901	85	59	5	3902								
4	SUN W.	60	12	53	3414	61	34	54	3407	62	57	2	3400	64	19	18	3393								
	Spica ♀ W.	20	54	46	3049	22	23	58	3041	23	53	20	3034	25	22	50	3027								
	Antares E.	25	2	40	3039	23	33	15	3033	22	3	43	3027	20	34	4	3020								
	α Aquilæ E.	79	52	41	3909	78	39	30	3912	77	26	22	3916	76	13	19	3921								
5	SUN W.	71	12	55	3349	72	36	10	3339	73	59	36	3329	75	23	14	3318								
	Spica ♀ W.	32	52	48	2985	34	23	19	2975	35	54	3	2965	37	25	0	2955								
	α Aquilæ E.	70	9	34	3959	68	57	14	3971	67	45	6	3983	66	33	10	3997								
	Fomalhaut E.	95	26	0	3186	93	59	34	3176	92	32	56	3166	91	6	6	3156								
6	SUN W.	82	24	48	3256	83	49	51	3242	85	15	10	3229	86	40	45	3214								
	Spica ♀ W.	45	3	5	2898	46	35	27	2885	48	8	5	2873	49	40	59	2859								
	α Aquilæ E.	60	37	33	4097	59	27	28	4123	58	17	48	4153	57	8	37	4186								
	Fomalhaut E.	83	48	48	3102	82	20	41	3091	80	52	21	3081	79	23	48	3069								
	α Pegasi E.	105	5	57	3230	103	40	24	3213	102	14	30	3197	100	48	17	3180								
7	SUN W.	93	53	11	3136	95	20	37	3119	96	48	24	3102	98	16	31	3084								
	Spica ♀ W.	57	30	0	2786	59	4	46	2771	60	39	52	2755	62	15	19	2738								
	Mars E.	25	43	27	3030	27	13	3	3012	28	43	1	2994	30	13	21	2977								
	α Aquilæ E.	51	31	45	4416	50	26	38	4479	49	22	27	4549	48	19	18	4627								
	Fomalhaut E.	71	57	35	3013	70	27	39	3002	68	57	29	2993	67	27	7	2981								
	α Pegasi E.	93	32	14	3098	92	4	2	3082	90	35	31	3066	89	6	40	3050								
	Jupiter E.	107	1	0	2745	105	25	20	2729	103	49	19	2714	102	12	57	2698								
8	SUN W.	105	42	38	2993	107	13	0	2974	108	43	46	2954	110	14	57	2935								
	Spica ♀ W.	70	18	4	2654	71	55	46	2636	73	33	52	2618	75	12	23	2600								
	Mars W.	37	50	39	2883	39	23	17	2866	40	56	19	2847	42	29	46	2828								
	Antares W.	24	23	40	2652	26	1	24	2635	27	39	31	2617	29	18	3	2599								
	Fomalhaut E.	59	52	3	2935	58	20	28	2927	56	48	44	2920	55	16	51	2914								
	α Pegasi E.	81	37	34	2974	80	6	49	2959	78	35	45	2945	77	4	23	2932								
	Jupiter E.	94	5	40	2613	92	27	3	2596	90	48	2	2578	89	8	37	2559								
	SUN W.	117	57	5	2835	119	30	48	2814	121	4	57	2794	122	39	33	2774								
9	Spica ♀ W.	83	31	13	2507	85	12	17	2488	86	53	47	2469	88	35	44	2450								
	Mars W.	50	23	21	2730	51	59	21	2709	53	35	49	2690	55	12	42	2669								
	Antares W.	37	37	1	2505	39	18	7	2487	40	59	38	2467	42	41	37	2449								
	Fomalhaut E.	47	36	9	2907	46	3	59	2912	44	31	55	2920	43	0	1	2931								
	α Pegasi E.	69	23	25	2871	67	50	29	2860	66	17	19	2852	64	43	58	2844								
	Jupiter E.	80	45	11	2467	79	3	12	2448	77	20	46	2430	75	37	54	2411								
	SUN W.	130	39	9	2674	132	16	24	2654	133	54	6	2635	135	32	13	2615								

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .						
		°	'	''	°	'	''	°	'	''	°	'	''				
10	Spica η W.	97	12	9	2356	98	56	47	2338	100	41	51	2320	102	27	22	2302
	Mars W.	63	23	53	2571	65	3	28	2551	66	43	30	2532	68	23	58	2514
	Antares W.	51	18	11	2355	53	2	50	2336	54	47	57	2318	56	33	30	2300
	Fomalhaut E.	35	25	52	3061	33	56	55	3110	32	28	58	3170	31	2	13	3245
	α Pegasi E.	56	55	11	2824	55	21	15	2826	53	47	21	2831	52	13	33	2838
	Jupiter E.	66	56	50	2318	65	11	16	2300	63	25	16	2281	61	38	48	2264
	α Arietis E.	97	10	10	2399	95	26	34	2380	93	42	31	2362	91	58	2	2344
11	Mars W.	76	52	49	2423	78	35	51	2406	80	19	17	2389	82	3	7	2373
	Antares W.	65	27	46	2214	67	15	53	2197	69	4	25	2181	70	53	21	2166
	α Pegasi E.	44	28	17	2930	42	56	36	2963	41	25	37	3005	39	55	30	3055
	Jupiter E.	52	40	0	2177	50	50	58	2161	49	1	32	2145	47	11	42	2130
	α Arietis E.	83	9	9	2258	81	22	8	2242	79	34	43	2227	77	46	56	2212
12	Mars W.	90	47	52	2300	92	33	51	2287	94	20	9	2275	96	6	45	2264
	Antares W.	80	3	37	2096	81	54	43	2083	83	46	8	2071	85	37	51	2060
	α Pegasi E.	32	44	38	3497	31	24	11	3645	30	6	25	3823	28	51	47	4039
	Jupiter E.	37	56	53	2060	36	4	53	2048	34	12	33	2037	32	19	56	2026
	α Arietis E.	68	42	42	2147	66	52	54	2136	65	2	50	2126	63	12	30	2116
	Aldebaran E.	99	16	3	2158	97	26	33	2145	95	36	43	2133	93	46	34	2122
	Mars W.	105	3	38	2217	106	51	41	2210	108	39	54	2204	110	28	16	2197
13	Antares W.	95	0	23	2015	96	53	34	2008	98	46	56	2002	100	40	28	1996
	α Aquilæ W.	52	24	1	3517	53	44	6	3438	55	5	40	3366	56	28	35	3301
	Jupiter E.	22	52	55	1982	20	58	52	1975	19	4	38	1969	17	10	15	1965
	α Arietis E.	53	57	45	2084	52	6	21	2081	50	14	52	2078	48	23	19	2077
	Aldebaran E.	84	31	57	2077	82	40	22	2071	80	48	38	2065	78	56	45	2061
	Saturn E.	119	32	24	2066	117	40	32	2058	115	48	28	2050	113	56	12	2044
	Mars W.	110	9	51	1980	112	3	57	1980	113	58	3	1979	115	52	10	1980
14	α Aquilæ W.	63	39	52	3062	65	8	48	3028	66	38	26	2998	68	8	42	2972
	α Arietis E.	39	6	1	2097	37	14	57	2107	35	24	8	2119	33	33	37	2134
	Aldebaran E.	69	36	1	2051	67	43	46	2053	65	51	34	2055	63	59	25	2057
	Saturn E.	104	32	52	2025	102	39	57	2024	100	47	0	2024	98	54	3	2023
	Mars W.	75	46	50	2889	77	19	23	2881	78	52	7	2876	80	24	57	2873
15	Fomalhaut W.	45	31	2	2403	47	14	32	2384	48	58	29	2369	50	42	48	2357
	α Pegasi W.	28	59	48	3722	30	16	12	3538	31	35	54	3386	32	58	27	3257
	Aldebaran E.	54	40	26	2091	52	49	13	2101	50	58	15	2112	49	7	34	2125
	Saturn E.	89	29	49	2039	87	37	15	2044	85	44	49	2050	83	52	32	2056
	Pollux E.	97	55	42	1996	96	2	2	2002	94	8	30	2008	92	15	8	2014
	α Aquilæ W.	88	9	8	2891	89	41	39	2901	91	13	56	2913	92	45	58	2927
	Fomalhaut W.	59	27	40	2331	61	12	55	2331	62	58	9	2334	64	43	19	2337
16	α Pegasi W.	40	22	19	2860	41	55	29	2814	43	29	38	2775	45	4	38	2743
	Jupiter W.	22	57	47	2021	24	50	49	2031	26	43	35	2041	28	36	5	2052
	Aldebaran E.	39	59	52	2214	38	11	46	2238	36	24	15	2266	34	37	25	2295
	Saturn E.	74	34	6	2101	72	43	8	2112	70	52	27	2123	69	2	3	2135
	Pollux E.	82	51	11	2057	80	59	6	2068	79	7	17	2079	77	15	45	2090
	α Aquilæ W.	100	20	49	3028	101	50	27	3054	103	19	33	3082	104	48	5	3112
17	Fomalhaut W.	73	27	14	2374	75	11	26	2385	76	55	22	2396	78	39	3	2408
	α Pegasi W.	53	8	9	2652	54	45	54	2644	56	23	49	2638	58	1	52	2635
	Jupiter W.	37	54	1	2116	39	44	36	2129	41	34	51	2144	43	24	43	2158

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^d .	P.L. of diff.	VI ^d .	P.L. of diff.	IX ^d .	
		° ' "		° ' "		° ' "		° ' "	
17	Aldebaran E.	32 51 18	2329	31 6 1	2368	29 21 40	2411	27 38	
	Saturn E.	67 11 57	2149	65 22 12	2161	63 32 46	2175	61 43	
	Pollux E.	75 24 30	2102	73 33 34	2114	71 42 57	2127	69 52	
	SUN E.	138 59 49	2403	137 16 18	2415	135 33 5	2429	133 50	
18	Fomalhaut W.	80 22 26	2421	82 5 31	2434	83 48 17	2448	85 30	
	α Pegasi W.	59 39 59	2635	61 18 7	2636	62 56 13	2638	64 34	
	Jupiter W.	45 14 14	2173	47 3 22	2188	48 52 7	2204	50 40	
	α Arietis W.	16 7 34	2795	17 42 8	2706	19 18 40	2643	20 56	
	Saturn E.	52 43 56	2269	50 57 11	2287	49 10 52	2304	47 24	
	Pollux E.	60 46 29	2213	58 58 21	2229	57 10 36	2245	55 23	
	SUN E.	125 20 50	2519	123 40 3	2535	121 59 39	2551	120 19	
19	Fomalhaut W.	93 57 24	2545	95 37 34	2563	97 17 20	2582	98 56	
	α Pegasi W.	72 42 29	2683	74 19 32	2693	75 56 22	2704	77 32	
	Jupiter W.	59 36 27	2300	61 22 27	2317	63 8 2	2333	64 53	
	α Arietis W.	29 16 35	2519	30 57 22	2518	32 38 10	2520	34 18	
	Saturn E.	38 42 25	2422	36 59 22	2444	35 16 50	2467	33 34	
	Pollux E.	46 32 24	2343	44 47 27	2359	43 2 53	2376	41 18	
	SUN E.	112 5 22	2655	110 27 42	2674	108 50 27	2691	107 13	
20	α Pegasi W.	85 31 25	2786	87 6 11	2803	88 40 35	2818	90 14	
	Jupiter W.	73 33 18	2431	75 16 8	2448	76 58 35	2463	78 40	
	α Arietis W.	42 40 33	2566	44 20 14	2577	45 59 41	2588	47 38	
	Aldebaran W.	14 41 8	3587	15 59 56	3394	17 22 19	3253	18 47	
	Pollux E.	32 44 0	2478	31 2 16	2495	29 20 55	2511	27 39	
	SUN E.	99 15 12	2798	97 40 42	2816	96 6 35	2833	94 32	
21	α Pegasi W.	97 59 37	2920	99 31 30	2939	101 2 59	2958	102 34	
	Jupiter W.	87 5 31	2557	88 45 25	2572	90 24 59	2587	92 4	
	α Arietis W.	55 50 38	2663	57 28 7	2675	59 5 20	2689	60 42	
	Aldebaran W.	26 15 21	2917	27 47 18	2900	29 19 37	2887	30 52	
	SUN E.	86 49 40	2935	85 18 6	2951	83 46 52	2968	82 15	
22	Jupiter W.	100 15 28	2670	101 52 48	2683	103 29 50	2696	105 6	
	α Arietis W.	68 42 35	2764	70 17 50	2777	71 52 48	2789	73 27	
	Aldebaran W.	38 36 49	2871	40 9 45	2874	41 42 37	2879	43 15	
	SUN E.	74 46 24	3060	73 17 25	3074	71 48 43	3087	70 20	
23	α Arietis W.	81 17 18	2856	82 50 33	2868	84 23 33	2877	85 56	
	Aldebaran W.	50 57 32	2913	52 29 34	2920	54 1 27	2927	55 33	
	Saturn W.	15 32 59	3149	17 0 9	3109	18 28 8	3079	19 56	
	SUN E.	63 2 15	3165	61 35 24	3177	60 8 47	3189	58 42	
24	α Arietis W.	93 37 7	2936	95 8 40	2944	96 40 3	2954	98 11	
	Aldebaran W.	63 9 42	2969	64 40 34	2976	66 11 17	2982	67 41	
	Saturn W.	27 24 2	3018	28 53 52	3017	30 23 43	3017	31 53	
	Pollux W.	18 57 25	2904	20 29 39	2911	22 1 44	2918	23 33	
	SUN E.	51 33 44	3252	50 8 36	3261	48 43 39	3270	47 18	
25	Aldebaran W.	75 12 47	3020	76 42 35	3026	78 12 16	3031	79 41	
	Saturn W.	39 22 20	3030	40 51 55	3034	42 21 26	3038	43 50	
	Pollux W.	31 11 7	2959	32 42 11	2965	34 13 7	2971	35 43	
	SUN E.	40 17 32	3320	38 55 44	3327	37 30 4	3334	36 6	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.			XV ^h .			XVIII ^h .			XXI ^h .		
		P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.		
17	Aldebaran E.	25 56 14	2521	24 15 30	2591	22 36 23	2675	20 59 10	2779				
	Saturn E.	59 54 58	2204	58 6 37	2220	56 18 40	2236	54 31 6	2252				
	Pollux E.	68 2 42	2155	66 13 6	2169	64 23 52	2183	62 34 59	2198				
	SUN E.	132 7 36	2457	130 25 23	2472	128 43 30	2487	127 1 59	2503				
18	Fomalhaut W.	87 12 48	2479	88 54 31	2495	90 35 52	2511	92 16 50	2528				
	α Pegasi W.	66 12 13	2649	67 50 2	2655	69 27 42	2663	71 5 12	2672				
	Jupiter W.	52 28 28	2235	54 16 4	2251	56 3 15	2267	57 50 3	2283				
	α Arietis W.	22 35 34	2567	24 15 15	2546	25 55 24	2531	27 35 54	2523				
	Saturn E.	45 39 32	2341	43 54 32	2361	42 10 1	2381	40 25 59	2401				
	Pollux E.	53 36 17	2276	51 49 42	2293	50 3 32	2309	48 17 46	2326				
	SUN E.	118 39 59	2585	117 0 44	2603	115 21 53	2621	113 43 26	2638				
19	Fomalhaut W.	100 35 35	2619	102 14 4	2639	103 52 6	2658	105 29 42	2678				
	α Pegasi W.	79 9 14	2730	80 45 14	2743	82 20 57	2757	83 56 21	2772				
	Jupiter W.	66 38 2	2365	68 22 27	2382	70 6 27	2398	71 50 4	2414				
	α Arietis W.	35 59 35	2530	37 40 7	2538	39 20 28	2546	41 0 37	2556				
	Saturn E.	31 53 23	2515	30 12 31	2542	28 32 16	2570	26 52 39	2600				
	Pollux E.	39 34 59	2410	37 51 38	2427	36 8 42	2443	34 26 9	2460				
	SUN E.	105 37 7	2727	104 1 3	2745	102 25 23	2763	100 50 6	2780				
20	α Pegasi W.	91 48 23	2852	93 21 44	2868	94 54 44	2885	96 27 22	2903				
	Jupiter W.	80 22 22	2495	82 3 42	2511	83 44 40	2527	85 25 16	2542				
	α Arietis W.	49 17 47	2613	50 56 25	2625	52 34 46	2637	54 12 51	2650				
	Aldebaran W.	20 14 34	3074	21 43 15	3016	23 13 8	2973	24 43 54	2941				
	Pollux E.	25 59 23	2545	24 19 13	2562	22 39 26	2579	21 0 2	2596				
	SUN E.	92 59 28	2869	91 26 29	2885	89 53 51	2902	88 21 35	2919				
21	α Pegasi W.	104 4 47	2996	105 35 5	3015	107 4 59	3035	108 34 28	3056				
	Jupiter W.	93 43 5	2615	95 21 39	2629	96 59 54	2643	98 37 50	2657				
	α Arietis W.	62 18 53	2714	63 55 14	2727	65 31 18	2740	67 7 5	2753				
	Aldebaran W.	32 25 0	2873	33 57 54	2870	35 30 52	2869	37 3 51	2869				
	SUN E.	80 45 26	2999	79 15 12	3015	77 45 18	3030	76 15 42	3044				
22	Jupiter W.	106 43 4	2721	108 19 16	2732	109 55 13	2744	111 30 54	2756				
	α Arietis W.	75 1 58	2812	76 36 10	2823	78 10 8	2835	79 43 50	2846				
	Aldebaran W.	44 48 4	2889	46 20 37	2894	47 53 3	2900	49 25 22	2907				
	SUN E.	68 52 9	3115	67 24 18	3127	65 56 41	3141	64 29 21	3153				
23	α Arietis W.	87 28 55	2898	89 1 16	2908	90 33 25	2917	92 5 22	2927				
	Aldebaran W.	57 4 48	2942	58 36 14	2948	60 7 32	2954	61 38 42	2962				
	Saturn W.	21 25 44	3043	22 55 3	3033	24 24 35	3026	25 54 15	3021				
	SUN E.	57 16 15	3211	55 50 19	3221	54 24 35	3232	52 59 4	3242				
24	α Arietis W.	99 42 14	2970	101 13 5	2979	102 41 44	2986	104 14 14	2994				
	Aldebaran W.	69 12 19	2995	70 42 38	3001	72 49 30	3008	73 42 52	3014				
	Saturn W.	33 23 25	3020	34 53 13	3022	36 58 30	3024	37 52 41	3027				
	Pollux W.	25 5 27	2932	26 37 5	2939	28 34 29	2946	29 39 55	2953				
	SUN E.	45 54 17	3288	44 29 52	3296	43 36 36	3304	41 29 33	3312				
25	Aldebaran W.	81 11 17	3043	82 40 37	3051	84 10 30	3058	85 57 30	3068				
	Saturn W.	45 20 15	3044	46 49 33	3051	48 18 47	3058	49 56 35	3065				
	Pollux W.	37 14 37	2983	38 43 11	2990	40 12 38	2997	41 59 29	3004				
	SUN E.	34 43 8	3348	33 19 31	3356	32 26 43	3364	31 33 55	3372				

CONFIGURATIONS OF THE SATELLITES OF JUPITER.

At 14^h, MEAN TIME.

Day of the Month.	West.	East.
1	3· ○	○ ·1 4·
2		3· 1· ○ ·2 4·
3		·3 4· ○ ·2 1·
4		·4 ·1 3· ○
5	4·	○ 1· 3·
6	4·	·1 ○ 2· 3·
7	·4	2· ○ 3·
8	·4	·2 ○ ·1
9	·4 3·	1· ○ ·2
10	·3 4·	○ ·1
11		·1 4· ○
12		·2 ○ ·1 4·
13		·1 ○ 2· 3· 4·
14		2· ○ 1· 3· 4·
15	·1 ●	·2 ○ 3·
16		3· 1· ○ ·2
17		·3 ·1 2· ○ ·1 2· 4·
18		·3 2· ·1 ○ 4·
19		·2 ○ ·3 1·
20		·1 4· ○ 2· 3·
21	2· ○	4· ○ 1· 3·
22	4·	·2 ·1 ○ 3·
23	4·	3· 1· ○ ·2
24	·4	·3 ○ ·1 2·
25	·4	·3 2· 1· ○
26	·4	·2 ○ ·3 1·
27		·4 ·1 ○ ·2 3·
28		○ ·1 3·
29		·2 ·1 ○ 3· 4·
30	1· ○	3· ○ ·2 4·

This Table represents, at 14^h after *Mean Noon* of each day of the Month, the relative of the images of Jupiter and his Satellites, as they would appear (disregarding their lat an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of t the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to di the Satellites from each other; and their positions are such as to indicate the direction Satellites' motions, which are in all cases to be considered as *towards the numerals*. When lite is at its greatest elongation, the point is placed above or below the centre of the nun white circle (○) at the left or right hand of the page, denotes that the Satellite placed by of it is *on the disc of Jupiter*, and a black circle (●) that it is either *behind the disc, shadow, of Jupiter*.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^d . 17 ^h 02 ^m 71 ^s .	From Mean Noon of January 1.			
	Logarithm of						Days.	Day of the Year.	Fraction of the Year.	
	A	B	C	D						
							h	m	s	
1	+1.2447	-0.8509	+9.7682	-0.9626	13	14	29.52	163	244	.668
2	1.2473	0.8305	9.7700	0.9633	13	10	33.61	164	245	.671
3	1.2498	0.8090	9.7717	0.9639	13	6	37.70	165	246	.674
4	+1.2522	-0.7863	+9.7735	-0.9646	13	2	41.79	166	247	.676
5	1.2544	0.7621	9.7752	0.9652	12	58	45.89	167	248	.679
6	1.2566	0.7363	9.7768	0.9657	12	54	49.98	168	249	.682
7	+1.2585	-0.7088	+9.7785	-0.9663	12	50	54.07	169	250	.684
8	1.2604	0.6793	9.7802	0.9668	12	46	58.16	170	251	.687
9	1.2621	0.6474	9.7818	0.9673	12	43	2.25	171	252	.690
10	+1.2637	-0.6129	+9.7834	-0.9678	12	39	6.35	172	253	.693
11	1.2651	0.5753	9.7850	0.9682	12	35	10.44	173	254	.695
12	1.2664	0.5339	9.7866	0.9686	12	31	14.53	174	255	.698
13	+1.2676	-0.4880	+9.7882	-0.9690	12	27	18.62	175	256	.701
14	1.2687	0.4365	9.7898	0.9693	12	23	22.71	176	257	.704
15	1.2696	0.3779	9.7913	0.9697	12	19	26.81	177	258	.706
16	+1.2704	-0.3099	+9.7929	-0.9700	12	15	30.90	178	259	.709
17	1.2711	0.2291	9.7944	0.9702	12	11	34.99	179	260	.712
18	1.2716	0.1295	9.7959	0.9705	12	7	39.08	180	261	.715
19	+1.2721	-0.9997	+9.7975	-0.9707	12	3	43.18	181	262	.717
20	1.2724	9.8135	9.7990	0.9709	11	59	47.27	182	263	.720
21	1.2725	-9.4799	9.8005	0.9710	11	55	51.36	183	264	.723
22	+1.2726	+8.6742	+9.8019	-0.9711	11	51	55.45	184	265	.726
23	1.2725	9.5984	9.8034	0.9712	11	47	59.55	185	266	.728
24	1.2723	9.8729	9.8049	0.9713	11	44	3.64	186	267	.731
25	+1.2720	+0.0397	+9.8064	-0.9713	11	40	7.73	187	268	.734
26	1.2715	0.1599	9.8079	0.9713	11	36	11.82	188	269	.736
27	1.2709	0.2539	9.8094	0.9712	11	32	15.91	189	270	.739
28	+1.2702	+0.3311	+9.8109	-0.9712	11	28	20.01	190	271	.742
29	1.2693	0.3965	9.8123	0.9711	11	24	24.10	191	272	.745
30	1.2684	0.4533	9.8138	0.9710	11	20	28.19	192	273	.747
31	+1.2672	+0.5034	+9.8153	-0.9708	11	16	32.28	193	274	.750

CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 14^h, MEAN TIME.

Day of the Month.	West.	East.
1	3 ^o ○	○ 1 ^o 4 ^o
2		3 ^o 1 ^o ○ 2 ^o 4 ^o
3		3 ^o ○ 2 ^o 1 ^o
4		4 ^o 3 ^o ○
5	4 ^o	○ 1 ^o 3 ^o
6	4 ^o	○ 1 ^o 2 ^o 3 ^o
7	4 ^o	○ 2 ^o 3 ^o
8	4 ^o	○ 3 ^o 4 ^o
9	4 ^o 3 ^o 1 ^o	○ 2 ^o
10	3 ^o 4 ^o	○ 2 ^o 3 ^o
11		3 ^o 1 ^o 4 ^o ○
12		2 ^o ○ 3 ^o 4 ^o
13		1 ^o ○ 2 ^o 3 ^o 4 ^o
14		2 ^o ○ 1 ^o 3 ^o 4 ^o
15	1 ^o ●	2 ^o ○ 3 ^o 4 ^o
16		3 ^o 1 ^o ○ 2 ^o 4 ^o
17		3 ^o ○ 1 ^o 2 ^o 4 ^o
18		3 ^o 2 ^o 1 ^o ○ 4 ^o
19		2 ^o ○ 3 ^o 1 ^o 4 ^o
20		4 ^o 1 ^o ○ 2 ^o 3 ^o
21	2 ^o ○	4 ^o ○ 1 ^o 3 ^o
22	4 ^o	2 ^o 1 ^o ○ 3 ^o
23	4 ^o	3 ^o 1 ^o ○ 2 ^o
24	4 ^o 3 ^o	○ 1 ^o 2 ^o
25	4 ^o 3 ^o 2 ^o 1 ^o	○
26	4 ^o	○ 3 ^o 1 ^o
27		4 ^o 1 ^o ○ 2 ^o 3 ^o
28		○ 4 ^o 1 ^o 3 ^o
29		2 ^o 1 ^o ○ 3 ^o 4 ^o
30	1 ^o ○	3 ^o ○ 2 ^o 4 ^o

This Table represents, at 14^h after *Mean Noon* of each day of the Month, the relative position of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page, the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the numeral is *on* the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0'.176271. Days.	From Mean Noon of January 1.	
	Logarithm of						Day of the Year.	Fraction of the Year.
	A	B	C	D				
1	+1.2447	-0.8509	+9.7682	-0.9626	h m s 13 14 29.52	163	244	.668
2	1.2473	0.8305	9.7700	0.9633	13 10 33.61	164	245	.671
3	1.2498	0.8090	9.7717	0.9639	13 6 37.70	165	246	.674
4	+1.2522	-0.7863	+9.7735	-0.9646	13 2 41.79	166	247	.676
5	1.2544	0.7621	9.7752	0.9652	12 58 45.89	167	248	.679
6	1.2566	0.7363	9.7768	0.9657	12 54 49.98	168	249	.682
7	+1.2585	-0.7088	+9.7785	-0.9663	12 50 54.07	169	250	.684
8	1.2604	0.6793	9.7802	0.9668	12 46 58.16	170	251	.687
9	1.2621	0.6474	9.7818	0.9673	12 43 2.25	171	252	.690
10	+1.2637	-0.6129	+9.7834	-0.9678	12 39 6.35	172	253	.693
11	1.2651	0.5753	9.7850	0.9682	12 35 10.44	173	254	.695
12	1.2664	0.5339	9.7866	0.9686	12 31 14.53	174	255	.698
13	+1.2676	-0.4880	+9.7882	-0.9690	12 27 18.62	175	256	.701
14	1.2687	0.4365	9.7898	0.9693	12 23 22.71	176	257	.704
15	1.2696	0.3779	9.7913	0.9697	12 19 26.81	177	258	.706
16	+1.2704	-0.3099	+9.7929	-0.9700	12 15 30.90	178	259	.709
17	1.2711	0.2291	9.7944	0.9702	12 11 34.99	179	260	.712
18	1.2716	0.1295	9.7959	0.9705	12 7 39.08	180	261	.715
19	+1.2721	-9.9997	+9.7975	-0.9707	12 3 43.18	181	262	.717
20	1.2724	9.8135	9.7990	0.9709	11 59 47.27	182	263	.720
21	1.2725	-9.4799	9.8005	0.9710	11 55 51.36	183	264	.723
22	+1.2726	+8.6742	+9.8019	-0.9711	11 51 55.45	184	265	.726
23	1.2725	9.5984	9.8034	0.9712	11 47 59.55	185	266	.728
24	1.2723	9.8729	9.8049	0.9713	11 44 3.64	186	267	.731
25	+1.2720	+0.0397	+9.8064	-0.9713	11 40 7.73	187	268	.734
26	1.2715	0.1599	9.8079	0.97	11 36 11.82	188	269	.736
27	1.2709	0.2539	9.8094	0.9	11 32 15.91	189	270	.739
28	+1.2702	+0.3311	+9.8109	-	11 28 20.01	190	271	.742
29	1.2693	0.3965	9.8123	-	11 24 24.10	191		.745
30	1.2684	0.4533	9.8138	-	11 20 28.19	192		
31	+1.2672	+0.5034	+9.8153	-	11 16 32.28	193		

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Wed.	1	h m s 12 31 7.68	s 9.073	S. 3 21 47.3	" 58.23	m s 1 4.37	m s 10 27.18	s 0.781
Thur.	2	12 34 45.43	9.086	3 45 4.9	58.12	1 4.42	10 45.93	0.768
Frid.	3	12 38 23.50	9.100	4 8 19.9	58.00	1 4.47	11 4.37	0.755
Sat.	4	12 42 1.89	9.114	4 31 31.9	57.86	1 4.52	11 22.48	0.740
Sun.	5	12 45 40.63	9.129	4 54 40.4	57.70	1 4.58	11 40.26	0.725
Mon.	6	12 49 19.73	9.145	5 17 45.2	57.53	1 4.63	11 57.66	0.709
Tues.	7	12 52 59.22	9.162	5 40 45.8	57.34	1 4.69	12 14.67	0.693
Wed.	8	12 56 39.10	9.180	6 3 41.9	57.14	1 4.76	12 31.30	0.676
Thur.	9	13 0 19.41	9.198	6 26 33.1	56.92	1 4.82	12 47.50	0.657
Frid.	10	13 4 0.17	9.218	6 49 19.1	56.69	1 4.89	13 3.26	0.637
Sat.	11	13 7 41.39	9.238	7 11 59.4	56.44	1 4.97	13 18.54	0.617
Sun.	12	13 11 23.10	9.259	7 34 33.9	56.18	1 5.04	13 33.34	0.596
Mon.	13	13 15 5.31	9.281	7 57 2.0	55.90	1 5.12	13 47.64	0.574
Tues.	14	13 18 48.06	9.304	8 19 23.6	55.61	1 5.20	14 1.41	0.551
Wed.	15	13 22 31.36	9.328	8 41 38.1	55.30	1 5.28	14 14.64	0.527
Thur.	16	13 26 15.23	9.353	9 3 45.3	54.98	1 5.36	14 27.28	0.502
Frid.	17	13 29 59.70	9.379	9 25 44.8	54.64	1 5.45	14 39.33	0.477
Sat.	18	13 33 44.79	9.405	9 47 36.2	54.29	1 5.54	14 50.77	0.450
Sun.	19	13 37 30.51	9.432	10 9 19.1	53.93	1 5.63	15 1.58	0.423
Mon.	20	13 41 16.88	9.460	10 30 53.3	53.54	1 5.73	15 11.73	0.395
Tues.	21	13 45 3.92	9.489	10 52 18.2	53.14	1 5.82	15 21.22	0.367
Wed.	22	13 48 51.65	9.518	11 13 33.6	52.72	1 5.92	15 30.02	0.338
Thur.	23	13 52 40.08	9.548	11 34 38.9	52.29	1 6.02	15 38.12	0.308
Frid.	24	13 56 29.23	9.578	11 55 33.8	51.84	1 6.12	15 45.52	0.277
Sat.	25	14 0 19.10	9.609	12 16 17.9	51.37	1 6.23	15 52.18	0.246
Sun.	26	14 4 9.72	9.640	12 36 50.8	50.88	1 6.33	15 58.09	0.216
Mon.	27	14 8 1.09	9.672	12 57 12.0	50.38	1 6.44	16 3.26	0.185
Tues.	28	14 11 53.22	9.704	13 17 21.0	49.86	1 6.55	16 7.69	0.153
Wed.	29	14 15 46.11	9.736	13 37 17.5	49.32	1 6.66	16 11.34	0.120
Thur.	30	14 19 39.78	9.769	13 57 1.1	48.76	1 6.77	16 14.22	0.085
Frid.	31	14 23 34.23	9.802	14 16 31.2	48.18	1 6.88	16 16.31	0.055
Sat.	32	14 27 29.47		S. 14 35 47.5		1 7.00	16 17.62	

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
	Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
1	h m s 12 31 9.26	S. ° ' " 3 21 57.4	' " 16 1.5	m s 10 27.32	h m s 12 41 36.58
2	12 34 47.06	3 45 15.3	16 1.8	10 46.07	12 45 33.13
3	12 38 25.18	4 8 30.6	16 2.0	11 4.51	12 49 29.69
4	12 42 3.62	4 31 42.8	16 2.3	11 22.62	12 53 26.24
5	12 45 42.40	4 54 51.6	16 2.6	11 40.40	12 57 22.80
6	12 49 21.55	5 17 56.7	16 2.9	11 57.80	13 1 19.35
7	12 53 1.09	5 40 57.5	16 3.2	12 14.81	13 5 15.90
8	12 56 41.02	6 3 53.8	16 3.5	12 31.44	13 9 12.46
9	13 0 21.37	6 26 45.2	16 3.8	12 47.64	13 13 9.01
10	13 4 2.17	6 49 31.4	16 4.0	13 3.40	13 17 5.57
11	13 7 43.44	7 12 12.0	16 4.3	13 18.68	13 21 2.12
12	13 11 25.19	7 34 46.6	16 4.6	13 33.48	13 24 58.67
13	13 15 7.45	7 57 14.9	16 4.9	13 47.78	13 28 55.23
14	13 18 50.24	8 19 36.6	16 5.2	14 1.54	13 32 51.78
15	13 22 33.58	8 41 51.2	16 5.4	14 14.76	13 36 48.34
16	13 26 17.49	9 3 58.5	16 5.7	14 27.40	13 40 44.89
17	13 30 2.00	9 25 58.1	16 6.0	14 39.45	13 44 41.45
18	13 33 47.12	9 47 49.6	16 6.2	14 50.88	13 48 38.00
19	13 37 32.87	10 9 32.6	16 6.5	15 1.69	13 52 34.56
20	13 41 19.28	10 31 6.9	16 6.8	15 11.83	13 56 31.11
21	13 45 6.35	10 52 31.9	16 7.0	15 21.31	14 0 27.66
22	13 48 54.11	11 13 47.2	16 7.3	15 30.11	14 4 24.22
23	13 52 42.57	11 34 52.6	16 7.5	15 38.20	14 8 20.77
24	13 56 31.74	11 55 47.5	16 7.8	15 45.59	14 12 17.33
25	14 0 21.64	12 16 31.5	16 8.1	15 52.24	14 16 13.88
26	14 4 12.29	12 37 4.3	16 8.3	15 58.15	14 20 10.44
27	14 8 3.68	12 57 25.4	16 8.6	16 3.31	14 24 6.99
28	14 11 55.82	13 17 34.4	16 8.8	16 7.73	14 28 3.55
29	14 15 48.74	13 37 30.8	16 9.1	16 11.37	14 32 0.11
30	14 19 42.42	13 57 14.3	16 9.3	16 14.24	14 35 56.66
31	14 23 36.89	14 16 44.3	16 9.6	16 16.33	14 39 53.22
32	14 27 32.14	S. 14 36 0.4	16 9.8	16 17.63	14 43 49.77

The Semidiameter for *Apparent Noon* may be assumed the same as that for *Mean Noon*.

MEAN TIME.								
Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S				
	Longitude.	Latitude.		Semidiameter.		Horizontal Pa		
	Noon.	Noon.	Noon.	Noon.	Midnight.	Noon.	3	
1	188 28 50.4	S. 0.05	0.0001479	14 43.6	14 45.0	54 2.6	5	
2	189 27 58.2	0.17	0.0000210	14 46.9	14 49.2	54 14.5	5	
3	190 27 7.8	0.27	9.9998936	14 51.9	14 55.2	54 33.2	5	
4	191 26 19.3	0.35	9.9997659	14 59.1	15 3.4	54 59.4	5	
5	192 25 32.6	0.40	9.9996379	15 8.4	15 13.8	55 33.5	5	
6	193 24 47.7	0.42	9.9995097	15 19.8	15 26.2	56 15.4	5	
7	194 24 4.6	0.41	9.9993816	15 33.1	15 40.4	57 4.3	5	
8	195 23 23.1	0.37	9.9992537	15 47.9	15 55.6	57 58.6	5	
9	196 22 43.5	0.30	9.9991262	16 3.3	16 10.9	58 55.2	5	
10	197 22 5.7	0.21	9.9989992	16 18.1	16 24.9	59 49.5	6	
11	198 21 29.7	S. 0.09	9.9988728	16 30.9	16 36.0	60 36.3	6	
12	199 20 55.6	N. 0.03	9.9987471	16 40.0	16 42.9	61 9.9	6	
13	200 20 23.5	0.16	9.9986222	16 44.4	16 44.5	61 25.8	6	
14	201 19 53.4	0.30	9.9984984	16 43.2	16 40.5	61 21.4	6	
15	202 19 25.3	0.43	9.9983757	16 36.6	16 31.5	60 57.1	6	
16	203 18 59.3	0.54	9.9982538	16 25.5	16 18.7	60 16.4	5	
17	204 18 35.5	0.64	9.9981329	16 11.3	16 3.6	59 24.5	5	
18	205 18 13.8	0.71	9.9980129	15 55.7	15 47.8	58 27.1	5	
19	206 17 54.4	0.75	9.9978938	15 40.0	15 32.5	57 29.4	5	
20	207 17 37.3	0.76	9.9977756	15 25.3	15 18.7	56 35.8	5	
21	208 17 22.4	0.75	9.9976581	15 12.5	15 7.0	55 48.8	5	
22	209 17 9.8	0.71	9.9975413	15 2.0	14 57.6	55 10.0	5	
23	210 16 59.5	0.63	9.9974250	14 53.8	14 50.6	54 39.9	5	
24	211 16 51.3	0.53	9.9973092	14 47.9	14 45.8	54 18.4	5	
25	212 16 45.3	0.42	9.9971939	14 44.2	14 43.1	54 4.7	5	
26	213 16 41.5	0.29	9.9970788	14 42.4	14 42.2	53 58.2	5	
27	214 16 39.8	0.15	9.9969639	14 42.3	14 42.9	53 57.9	5	
28	215 16 40.1	N. 0.02	9.9968494	14 43.8	14 45.0	54 3.2	5	
29	216 16 42.3	S. 0.09	9.9967353	14 46.5	14 48.4	54 13.4	5	
30	217 16 46.4	0.20	9.9966215	14 50.6	14 53.1	54 28.3	5	
31	218 16 52.3	0.29	9.9965082	14 56.0	14 59.1	54 48.0	5	
32	219 16 59.8	S. 0.35	9.9963952	15 2.6	15 6.5	55 12.5	5	

MEAN TIME.

		THE MOON'S									
Day of the Week.	Day of the Month.	Longitude.				Latitude.				Age.	Meridian
		Noon.		Midnight.		Noon.		Midnight.		Noon.	Passage.
		°	'	°	'	°	'	°	'	d	h m
Wed.	1	213	46 45.0	219	41 37.5	S. 1 40	24.9	S. 2 10	59.9	2.3	1 24.6
Thur.	2	225	37 41.2	231	35 18.9	2 40	16.4	3 7	55.8	3.3	2 7.6
Frid.	3	237	34 55.1	243	36 55.2	3 33	40.7	3 57	13.7	4.3	2 53.8
Sat.	4	249	41 46.5	255	49 56.8	4 18	17.9	4 36	36.5	5.3	3 43.5
Sun.	5	262	1 54.7	268	18 9.1	4 51	53.3	5 3	53.1	6.3	4 36.7
Mon.	6	274	39 8.6	281	5 20.8	5 12	20.5	5 17	1.0	7.3	5 32.3
Tues.	7	287	37 11.1	294	15 1.9	5 17	42.0	5 14	11.9	8.3	6 29.0
Wed.	8	300	59 11.8	307	49 53.7	5 6	21.5	4 54	4.6	9.3	7 25.1
Thur.	9	314	47 14.5	321	51 12.8	4 37	18.6	4 16	6.1	10.3	8 19.7
Frid.	10	329	1 38.9	336	18 12.3	3 50	34.8	3 20	59.5	11.3	9 12.5
Sat.	11	343	40 23.1	351	7 30.1	2 47	42.2	2 11	11.7	12.3	10 3.9
Sun.	12	358	38 42.5	6	13 0.4	1 32	4.5	S. 0 51	4.9	13.3	10 55.0
Mon.	13	13	49 16.6	21	26 19.3	S. 0 8	59.8	N. 0 33	18.9	14.3	11 47.0
Tues.	14	29	2 53.9	36	37 47.0	N. 1 14	58.7	1 55	8.6	15.3	12 41.3
Wed.	15	44	9 48.3	51	37 54.1	2 33	1.7	3 7	56.4	16.3	13 38.4
Thur.	16	59	1 7.5	66	18 42.9	3 39	18.2	4 6	39.9	17.3	14 38.3
Frid.	17	73	30 4.8	80	34 48.4	4 29	42.8	4 48	15.3	18.3	15 39.8
Sat.	18	87	32 40.0	94	23 35.6	5 2	12.6	5 11	35.6	19.3	16 40.5
Sun.	19	101	7 40.4	107	45 6.6	5 16	30.2	5 17	5.2	20.3	17 38.2
Mon.	20	114	16 13.4	120	41 24.5	5 13	33.1	5 6	7.6	21.3	18 31.5
Tues.	21	127	1 7.6	133	15 52.8	4 55	4.0	4 40	37.8	22.3	19 20.2
Wed.	22	139	26 11.9	145	32 37.6	4 23	6.1	4 2	45.5	23.3	20 4.7
Thur.	23	151	35 42.2	157	35 57.7	3 39	52.7	3 14	44.8	24.3	20 46.2
Frid.	24	163	33 55.3	169	30 4.7	2 47	39.9	2 18	54.0	25.3	21 25.8
Sat.	25	175	24 53.4	181	18 47.9	1 48	45.7	1 17	33.0	26.3	22 4.5
Sun.	26	187	12 11.9	193	5 28.2	N. 0 45	34.2	N. 0 13	7.9	27.3	22 43.4
Mon.	27	198	58 57.1	204	52 57.2	S. 0 19	26.5	S. 0 51	50.0	28.3	23 23.6
Tues.	28	210	47 45.7	216	43 38.4	1 23	42.9	1 54	45		♂ 6.0
Wed.	29	222	40 49.7	228	39 33.5	2 24	38.0	2 53			
Thur.	30	234	40 3.4	240	42 31.7	3 19	37.4	3 4			51.4
Frid.	31	246	47 12.1	252	54 17.9	4 6	11.2	4			40.2
Sat.	32	259	4 3.3	265	16 43.0	S. 4 42	3.0	S			32.3

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
<i>WEDNESDAY 1.</i>				<i>FRIDAY 3.</i>		
	h m s	° ' "	"		h m s	° ' "
0	14 3 47.50	S. 14 21 43.3	124.96	0	15 37 42.89	S. 23 6 15.9
1	14 5 38.51	14 34 13.1	124.44	1	15 39 47.90	23 15 10.8
2	14 7 29.76	14 46 39.7	123.90	2	15 41 53.24	23 23 59.7
3	14 9 21.23	14 59 3.1	123.36	3	15 43 58.93	23 32 42.7
4	14 11 12.93	15 11 23.3	122.81	4	15 46 4.95	23 41 19.5
5	14 13 4.87	15 23 40.1	122.24	5	15 48 11.31	23 49 50.3
6	14 14 57.05	15 35 53.6	121.67	6	15 50 18.02	23 58 14.8
7	14 16 49.48	15 48 3.6	121.09	7	15 52 25.07	24 6 33.1
8	14 18 42.15	16 0 10.2	120.50	8	15 54 32.45	24 14 45.1
9	14 20 35.07	16 12 13.2	119.91	9	15 56 40.18	24 22 50.7
10	14 22 28.24	16 24 12.7	119.30	10	15 58 48.25	24 30 49.9
11	14 24 21.67	16 36 8.5	118.68	11	16 0 56.67	24 38 42.6
12	14 26 15.36	16 48 0.6	118.06	12	16 3 5.42	24 46 28.7
13	14 28 9.31	16 59 49.0	117.43	13	16 5 14.52	24 54 8.2
14	14 30 3.52	17 11 33.6	116.79	14	16 7 23.96	25 1 41.0
15	14 31 58.01	17 23 14.3	116.13	15	16 9 33.74	25 9 7.0
16	14 33 52.76	17 34 51.1	115.47	16	16 11 43.86	25 16 26.2
17	14 35 47.79	17 46 23.9	114.80	17	16 13 54.32	25 23 38.6
18	14 37 43.09	17 57 52.7	114.12	18	16 16 5.12	25 30 44.0
19	14 39 38.67	18 9 17.5	113.43	19	16 18 16.26	25 37 42.3
20	14 41 34.54	18 20 38.0	112.73	20	16 20 27.74	25 44 33.7
21	14 43 30.69	18 31 54.4	112.02	21	16 22 39.55	25 51 17.8
22	14 45 27.13	18 43 6.5	111.30	22	16 24 51.70	25 57 54.8
23	14 47 23.85	S. 18 54 14.3	110.57	23	16 27 4.18	S. 26 4 24.6
<i>THURSDAY 2.</i>				<i>SATURDAY 4.</i>		
0	14 49 20.87	S. 19 5 17.8	109.83	0	16 29 16.98	S. 26 10 47.0
1	14 51 18.18	19 16 16.8	109.08	1	16 31 30.12	26 17 2.1
2	14 53 15.80	19 27 11.3	108.33	2	16 33 43.59	26 23 9.7
3	14 55 13.71	19 38 1.3	107.56	3	16 35 57.39	26 29 9.8
4	14 57 11.92	19 48 46.6	106.78	4	16 38 11.52	26 35 2.3
5	14 59 10.44	19 59 27.3	106.00	5	16 40 25.96	26 40 47.2
6	15 1 9.27	20 10 3.3	105.20	6	16 42 40.73	26 46 24.5
7	15 3 8.41	20 20 34.5	104.39	7	16 44 55.82	26 51 54.0
8	15 5 7.86	20 31 0.9	103.58	8	16 47 11.23	26 57 15.7
9	15 7 7.62	20 41 22.4	102.75	9	16 49 26.95	27 2 29.5
10	15 9 7.70	20 51 38.9	101.91	10	16 51 42.98	27 7 35.4
11	15 11 8.09	21 1 50.4	101.07	11	16 53 59.32	27 12 33.4
12	15 13 8.80	21 11 56.8	100.22	12	16 56 15.97	27 17 23.3
13	15 15 9.84	21 21 58.1	99.35	13	16 58 32.92	27 22 5.1
14	15 17 11.20	21 31 54.2	98.47	14	17 0 50.17	27 26 38.8
15	15 19 12.88	21 41 45.0	97.59	15	17 3 7.72	27 31 4.2
16	15 21 14.89	21 51 30.6	96.69	16	17 5 25.57	27 35 21.4
17	15 23 17.23	22 1 10.7	95.78	17	17 7 43.70	27 39 30.3
18	15 25 19.89	22 10 45.4	94.86	18	17 10 2.12	27 43 30.8
19	15 27 22.89	22 20 14.6	93.94	19	17 12 20.83	27 47 22.9
20	15 29 26.22	22 29 38.2	93.00	20	17 14 39.81	27 51 6.5
21	15 31 29.88	22 38 56.2	92.05	21	17 16 59.07	27 54 41.6
22	15 33 33.88	22 48 8.6	91.09	22	17 19 18.60	27 58 8.0
23	15 35 38.21	22 57 15.1	90.12	23	17 21 38.40	28 1 25.9
24	15 37 42.89	S. 23 6 15.9		24	17 23 58.46	S. 28 4 35.1

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

ht Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 5.						
^m 23 58'46	S. 28 4 35'1	" 30'08	0	19 19 29'66	S. 27 32 49'4	46'49
26 18'78	28 7 35'6	28'61	1	19 21 56'00	27 28 10'4	48'14
28 39'36	28 10 27'2	27'14	2	19 24 22'31	27 23 21'6	49'80
31 0'19	28 13 10'1	25'66	3	19 26 48'60	27 18 22'8	51'45
33 21'27	28 15 44'0	24'17	4	19 29 14'85	27 13 14'1	53'10
35 42'59	28 18 9'1	22'67	5	19 31 41'07	27 7 55'5	54'75
38 4'14	28 20 25'1	21'17	6	19 34 7'24	27 2 27'0	56'39
40 25'93	28 22 32'2	19'66	7	19 36 33'36	26 56 48'7	58'03
42 47'94	28 24 30'1	18'14	8	19 38 59'43	26 51 0'5	59'67
45 10'18	28 26 19'0	16'62	9	19 41 25'43	26 45 2'4	61'31
47 32'63	28 27 58'7	15'09	10	19 43 51'37	26 38 54'5	62'95
49 55'29	28 29 29'2	13'55	11	19 46 17'24	26 32 36'9	64'58
52 18'16	28 30 50'5	12'00	12	19 48 43'04	26 26 9'4	66'20
54 41'23	28 32 2'5	10'45	13	19 51 8'76	26 19 32'2	67'83
57 4'50	28 33 5'2	8'89	14	19 53 34'38	26 12 45'2	69'45
59 27'95	28 33 58'5	7'32	15	19 55 59'92	26 5 48'5	71'06
1 51'59	28 34 42'4	5'75	16	19 58 25'37	25 58 42'1	72'67
4 15'41	28 35 16'9	4'17	17	20 0 50'71	25 51 26'1	74'28
6 39'41	28 35 42'0	2'59	18	20 3 15'95	25 44 0'4	75'88
9 3'57	28 35 57'5	1'00	19	20 5 41'09	25 36 25'1	77'48
11 27'89	28 36 3'5	0'59	20	20 8 6'11	25 28 40'3	79'07
13 52'37	28 36 0'0	2'19	21	20 10 31'02	25 20 45'9	80'65
16 17'06	28 35 46'8	3'79	22	20 12 55'81	25 12 41'9	82'23
18 41'77	S. 28 35 24'1	5'40	23	20 15 20'47	S. 25 4 28'5	83'81
MONDAY 6.						
21 6'67	S. 28 34 51'7	7'01	0	20 17 45'01	S. 24 56 5'7	85'37
23 31'71	28 34 9'6	8'63	1	20 20 9'41	24 47 33'5	86'93
25 56'88	28 33 17'9	10'25	2	20 22 33'68	24 38 51'8	88'49
28 22'17	28 32 16'4	11'87	3	20 24 57'82	24 30 0'9	90'04
30 47'56	28 31 5'1	13'50	4	20 27 21'81	24 21 0'7	91'58
33 13'07	28 29 44'1	15'13	5	20 29 45'65	24 11 51'2	93'11
35 38'68	28 28 13'3	16'77	6	20 32 9'35	24 2 32'5	94'64
38 4'38	28 26 32'7	18'41	7	20 34 32'91	23 53 4'7	96'16
40 30'16	28 24 42'3	20'05	8	20 36 56'31	23 43 27'8	97'67
42 56'03	28 22 42'0	21'69	9	20 39 19'55	23 33 41'8	99'17
45 21'98	28 20 31'9	23'33	10	20 41 42'63	23 23 46'7	100'67
47 48'00	28 18 11'9	24'98	11	20 44 5'56	23 13 42'7	102'15
50 14'07	28 15 42'0	26'63	12	20 46 28'33	23 3 29'8	103'63
52 40'20	28 13 2'2	28'28	13	20 48 50'93	22 53 8'0	105'10
55 6'39	28 10 12'5	29'93	14	20 51 13'37	22 42 37'4	106'56
57 32'62	28 7 12'9	31'59	15	20 53 35'64	22 31 58'0	108'01
59 58'89	28 4 3'4	33'24	16	20 55 57'74	22 21 9'9	109'46
2 25'19	28 0 43'9	34'90	17	20 58 19'67	22 10 13'2	110'89
4 51'51	27 57 14'5	36'55	18	21 0 41'42	21 59 7'8	112'31
7 17'86	27 53 35'2	38'21	19	21 3 3'01	21 47 53'9	113'72
9 44'22	27 49 45'9	39'87	20	21 5 24'42	21 36 31'6	115'13
12 10'58	27 45 46'7	41'53	21	21 7 45'65	21 25 0'8	116'52
14 36'95	27 41 37'5	43'18	22	21 10 6'71	21 13 21'7	117'90
17 3'31	27 37 18'4	44'84	23	21 12 27'59	21 1 34'3	119'27
19 29'66	S. 27 32 49'4		24	21 14 48'30	S. 20 49 38'6	

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Dist. for
THURSDAY 9.				SATURDAY 11.			
0	h m s 21 14 48.30	S. 20 49 38.6	120.63	0	h m s 23 4 11.22	S. 9 0 17.3	174
1	21 17 8.83	20 37 34.8	121.99	1	23 6 24.87	8 43 14.7	171
2	21 19 29.17	20 25 22.9	123.33	2	23 8 38.46	8 26 8.2	171
3	21 21 49.34	20 13 2.9	124.65	3	23 10 51.97	8 8 57.8	171
4	21 24 9.33	20 0 35.0	125.97	4	23 13 5.43	7 51 43.8	171
5	21 26 29.15	19 47 59.2	127.27	5	23 15 18.83	7 34 26.1	171
6	21 28 48.78	19 35 15.5	128.57	6	23 17 32.17	7 17 4.8	171
7	21 31 8.24	19 22 24.1	129.85	7	23 19 45.46	6 59 40.2	171
8	21 33 27.52	19 9 25.0	131.12	8	23 21 58.71	6 42 12.3	171
9	21 35 46.62	18 56 18.3	132.38	9	23 24 11.92	6 24 41.2	171
10	21 38 5.54	18 43 4.0	133.63	10	23 26 25.10	6 7 7.0	171
11	21 40 24.29	18 29 42.3	134.86	11	23 28 38.24	5 49 29.9	171
12	21 42 42.87	18 16 13.1	136.08	12	23 30 51.35	5 31 49.9	171
13	21 45 1.27	18 2 36.6	137.29	13	23 33 4.44	5 14 7.2	171
14	21 47 19.50	17 48 52.9	138.48	14	23 35 17.52	4 56 21.8	171
15	21 49 37.56	17 35 2.0	139.66	15	23 37 30.58	4 38 33.9	171
16	21 51 55.45	17 21 4.0	140.83	16	23 39 43.64	4 20 43.7	171
17	21 54 13.17	17 6 59.0	141.99	17	23 41 56.69	4 2 51.2	171
18	21 56 30.72	16 52 47.0	143.13	18	23 44 9.75	3 44 56.5	171
19	21 58 48.11	16 38 28.2	144.26	19	23 46 22.81	3 26 59.7	171
20	22 1 5.33	16 24 2.7	145.37	20	23 48 35.88	3 9 1.1	181
21	22 3 22.39	16 9 30.4	146.47	21	23 50 48.96	2 51 0.6	181
22	22 5 39.29	15 54 51.6	147.56	22	23 53 2.07	2 32 58.4	181
23	22 7 56.04	S. 15 40 6.2	148.63	23	23 55 15.20	S. 2 14 54.7	181
FRIDAY 10.				SUNDAY 12.			
0	h m s 22 10 12.62	S. 15 25 14.4	149.69	0	h m s 23 57 28.37	S. 1 56 49.5	181
1	22 12 29.05	15 10 16.3	150.73	1	23 59 41.57	1 38 43.0	181
2	22 14 45.34	14 55 11.9	151.76	2	0 1 54.81	1 20 35.3	181
3	22 17 1.47	14 40 1.3	152.77	3	0 4 8.09	1 2 26.5	181
4	22 19 17.46	14 24 44.6	153.77	4	0 6 21.43	0 44 16.7	181
5	22 21 33.30	14 9 22.0	154.76	5	0 8 34.82	0 26 6.1	181
6	22 23 49.00	13 53 53.4	155.73	6	0 10 48.27	S. 0 7 54.8	181
7	22 26 4.57	13 38 19.1	156.68	7	0 13 1.78	S. 0 10 17.2	181
8	22 28 20.00	13 22 39.0	157.62	8	0 15 15.37	0 28 29.6	181
9	22 30 35.30	13 6 53.3	158.54	9	0 17 29.03	0 46 42.3	181
10	22 32 50.47	12 51 2.0	159.45	10	0 19 42.77	1 4 55.3	181
11	22 35 5.51	12 35 5.3	160.34	11	0 21 56.59	1 23 8.3	181
12	22 37 20.43	12 19 3.3	161.21	12	0 24 10.51	1 41 21.4	181
13	22 39 35.23	12 2 56.0	162.07	13	0 26 24.52	1 59 34.3	181
14	22 41 49.92	11 46 43.6	162.92	14	0 28 38.63	2 17 46.9	181
15	22 44 4.50	11 30 26.1	163.74	15	0 30 52.84	2 35 59.1	181
16	22 46 18.96	11 14 3.6	164.55	16	0 33 7.16	2 54 10.8	181
17	22 48 33.32	10 57 36.3	165.35	17	0 35 21.59	3 12 21.8	181
18	22 50 47.58	10 41 4.2	166.13	18	0 37 36.14	3 30 32.1	181
19	22 53 1.75	10 24 27.4	166.89	19	0 39 50.82	3 48 41.4	181
20	22 55 15.81	10 7 46.1	167.63	20	0 42 5.63	4 6 49.7	181
21	22 57 29.79	9 51 0.3	168.35	21	0 44 20.57	4 24 56.8	180
22	22 59 43.68	9 34 10.2	169.06	22	0 46 35.65	4 43 2.6	180
23	23 1 57.49	9 17 15.8	169.75	23	0 48 50.87	5 1 7.0	180
24	23 4 11.22	S. 9 0 17.3		24	0 51 6.23	N. 5 19 9.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>MONDAY 13.</i>				<i>WEDNESDAY 15.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	0 51 6.23	N. 5 19 9.8	180.19	0	2 43 35.86	N.18 32 13.4	141.26
1	0 53 21.75	5 37 11.0	179.89	1	2 46 2.93	18 46 21.0	139.94
2	0 55 37.43	5 55 10.3	179.56	2	2 48 30.28	19 0 20.6	138.60
3	0 57 53.27	6 13 7.7	179.21	3	2 50 57.92	19 14 12.2	137.25
4	1 0 9.27	6 31 3.0	178.85	4	2 53 25.85	19 27 55.7	135.88
5	1 2 25.44	6 48 56.1	178.46	5	2 55 54.06	19 41 31.0	134.49
6	1 4 41.79	7 6 46.8	178.04	6	2 58 22.56	19 54 57.9	133.08
7	1 6 58.32	7 24 35.1	177.61	7	3 0 51.34	20 8 16.4	131.65
8	1 9 15.04	7 42 20.7	177.15	8	3 3 20.41	20 21 26.3	130.21
9	1 11 31.94	8 0 3.6	176.67	9	3 5 49.76	20 34 27.6	128.75
10	1 13 49.03	8 17 43.7	176.17	10	3 8 19.39	20 47 20.1	127.27
11	1 16 6.33	8 35 20.8	175.65	11	3 10 49.29	21 0 3.7	125.78
12	1 18 23.82	8 52 54.7	175.11	12	3 13 19.47	21 12 38.4	124.27
13	1 20 41.52	9 10 25.4	174.54	13	3 15 49.92	21 25 4.0	122.74
14	1 22 59.42	9 27 52.6	173.95	14	3 18 20.65	21 37 20.5	121.20
15	1 25 17.54	9 45 16.3	173.34	15	3 20 51.65	21 49 27.6	119.64
16	1 27 35.87	10 2 36.4	172.71	16	3 23 22.91	22 1 25.5	118.06
17	1 29 54.43	10 19 52.7	172.06	17	3 25 54.43	22 13 13.8	116.47
18	1 32 13.21	10 37 5.0	171.38	18	3 28 26.22	22 24 52.7	114.87
19	1 34 32.21	10 54 13.3	170.68	19	3 30 58.26	22 36 21.9	113.25
20	1 36 51.45	11 11 17.5	169.97	20	3 33 30.56	22 47 41.4	111.61
21	1 39 10.93	11 28 17.3	169.23	21	3 36 3.10	22 58 51.0	109.96
22	1 41 30.65	11 45 12.6	168.46	22	3 38 35.89	23 9 50.8	108.30
23	1 43 50.61	N.12 2 3.4	167.68	23	3 41 8.92	N.23 20 40.6	106.63
<i>TUESDAY 14.</i>				<i>THURSDAY 16.</i>			
0	1 46 10.81	N.12 18 49.5	166.88	0	3 43 42.19	N.23 31 20.4	104.93
1	1 48 31.26	12 35 30.8	166.05	1	3 46 15.70	23 41 50.0	103.23
2	1 50 51.97	12 52 7.0	165.20	2	3 48 49.43	23 52 9.4	101.52
3	1 53 12.93	13 8 38.2	164.33	3	3 51 23.38	24 2 18.5	99.79
4	1 55 34.14	13 25 4.2	163.44	4	3 53 57.56	24 12 17.3	98.05
5	1 57 55.62	13 41 24.8	162.52	5	3 56 31.95	24 22 5.6	96.30
6	2 0 17.36	13 57 40.0	161.59	6	3 59 6.54	24 31 43.4	94.54
7	2 2 39.37	14 13 49.5	160.63	7	4 1 41.34	24 41 10.7	92.77
8	2 5 1.64	14 29 53.3	159.66	8	4 4 16.33	24 50 27.3	90.99
9	2 7 24.18	14 45 51.3	158.66	9	4 6 51.52	24 59 33.2	89.20
10	2 9 47.00	15 1 43.2	157.64	10	4 9 26.89	25 8 28.4	87.40
11	2 12 10.09	15 17 29.1	156.60	11	4 12 2.43	25 17 12.8	85.59
12	2 14 33.45	15 33 8.7	155.54	12	4 14 38.15	25 25 46.3	83.77
13	2 16 57.09	15 48 42.0	154.46	13	4 17 14.03	25 34 8.9	81.94
14	2 19 21.01	16 4 8.8	153.36	14	4 19 50.08	25 42 20.5	80.10
15	2 21 45.22	16 19 28.9	152.24	15	4 22 26.27	25 50 21.1	78.25
16	2 24 9.70	16 34 42.4	151.10	16	4 25 2.60	25 58 10.7	76.40
17	2 26 34.47	16 49 49.0	149.94	17	4 27 39.08	26 5 49.1	74.54
18	2 28 59.52	17 4 48.6	148.76	18	4 30 15.68	26 13 16.3	72.67
19	2 31 24.86	17 19 41.1	147.56	19	4 32 52.40	26 20 32.4	70.80
20	2 33 50.49	17 34 26.5	146.33	20	4 35 29.23	26 27 37.2	68.92
21	2 36 16.40	17 49 4.5	145.09	21	4 38 6.17	26 34 30.7	67.03
22	2 38 42.60	18 3 35.1	143.83	22	4 40 43.21	26 41 12.9	65.14
23	2 41 9.09	18 17 58.1	142.55	23	4 43 20.34	26 47 43.8	63.25
24	2 43 35.86	N.18 32 13.4		24	4 45 57.56	N.26 54 3.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>FRIDAY 17.</i>				<i>SUNDAY 19.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	4 45 57.56	N.26 54 3.3	61.35	0	6 50 24.34	N.28 14 59.0	
1	4 48 34.85	27 0 11.4	59.44	1	6 52 54.68	28 12 13.5	
2	4 51 12.20	27 6 8.0	57.53	2	6 55 24.67	28 9 17.9	
3	4 53 49.60	27 11 53.2	55.62	3	6 57 54.31	28 6 12.5	
4	4 56 27.06	27 17 26.9	53.71	4	7 0 23.61	28 2 57.1	
5	4 59 4.55	27 22 49.2	51.79	5	7 2 52.54	27 59 32.0	
6	5 1 42.07	27 27 59.9	49.87	6	7 5 21.10	27 55 57.2	
7	5 4 19.61	27 32 59.2	47.95	7	7 7 49.30	27 52 12.7	
8	5 6 57.16	27 37 46.9	46.03	8	7 10 17.12	27 48 18.6	
9	5 9 34.71	27 42 23.1	44.11	9	7 12 44.56	27 44 15.1	
10	5 12 12.26	27 46 47.8	42.19	10	7 15 11.62	27 40 2.1	
11	5 14 49.80	27 51 0.9	40.27	11	7 17 38.28	27 35 39.9	
12	5 17 27.30	27 55 2.5	38.34	12	7 20 4.55	27 31 8.3	
13	5 20 4.77	27 58 52.6	36.42	13	7 22 30.42	27 26 27.6	
14	5 22 42.21	28 2 31.1	34.50	14	7 24 55.89	27 21 37.8	
15	5 25 19.59	28 5 58.1	32.58	15	7 27 20.95	27 16 39.0	
16	5 27 56.90	28 9 13.6	30.67	16	7 29 45.61	27 11 31.3	
17	5 30 34.15	28 12 17.6	28.75	17	7 32 9.85	27 6 14.8	
18	5 33 11.32	28 15 10.1	26.84	18	7 34 33.67	27 0 49.4	
19	5 35 48.39	28 17 51.2	24.93	19	7 36 57.08	26 55 15.4	
20	5 38 25.37	28 20 20.8	23.03	20	7 39 20.06	26 49 32.8	
21	5 41 2.23	28 22 39.0	21.13	21	7 41 42.62	26 43 41.7	
22	5 43 38.98	28 24 45.7	19.23	22	7 44 4.75	26 37 42.2	
23	5 46 15.61	N.28 26 41.1	17.33	23	7 46 26.45	N.26 31 34.3	
<i>SATURDAY 18.</i>				<i>MONDAY 20.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	5 48 52.10	N.28 28 25.1	15.44	0	7 48 47.72	N.26 25 18.2	
1	5 51 28.44	28 29 57.8	13.56	1	7 51 8.55	26 18 53.9	
2	5 54 4.63	28 31 19.1	11.68	2	7 53 28.95	26 12 21.5	
3	5 56 40.66	28 32 29.2	9.81	3	7 55 48.91	26 5 41.1	
4	5 59 16.51	28 33 28.1	7.95	4	7 58 8.42	25 58 52.8	
5	6 1 52.18	28 34 15.8	6.09	5	8 0 27.50	25 51 56.6	
6	6 4 27.66	28 34 52.4	4.24	6	8 2 46.13	25 44 52.7	
7	6 7 2.94	28 35 17.8	2.39	7	8 5 4.33	25 37 41.2	
8	6 9 38.01	28 35 32.2	0.56	8	8 7 22.08	25 30 22.0	
9	6 12 12.87	28 35 35.5	1.27	9	8 9 39.38	25 22 55.4	
10	6 14 47.50	28 35 27.9	3.09	10	8 11 56.24	25 15 21.4	
11	6 17 21.90	28 35 9.3	4.90	11	8 14 12.65	25 7 40.0	
12	6 19 56.06	28 34 39.9	6.71	12	8 16 28.61	24 59 51.4	
13	6 22 29.97	28 33 59.6	8.50	13	8 18 44.13	24 51 55.7	
14	6 25 3.62	28 33 8.6	10.29	14	8 20 59.20	24 43 52.9	
15	6 27 37.01	28 32 6.9	12.07	15	8 23 13.83	24 35 43.1	
16	6 30 10.13	28 30 54.5	13.83	16	8 25 28.01	24 27 26.4	
17	6 32 42.96	28 29 31.5	15.59	17	8 27 41.75	24 19 2.9	
18	6 35 15.51	28 27 58.0	17.33	18	8 29 55.04	24 10 32.6	
19	6 37 47.76	28 26 14.0	19.07	19	8 32 7.89	24 1 55.7	
20	6 40 19.71	28 24 19.6	20.80	20	8 34 20.29	23 53 12.3	
21	6 42 51.35	28 22 14.8	22.51	21	8 36 32.26	23 44 22.3	
22	6 45 22.67	28 19 59.7	24.21	22	8 38 43.78	23 35 26.0	
23	6 47 53.67	28 17 34.4	25.90	23	8 40 54.86	23 26 23.3	
24	6 50 24.34	N.28 14 59.0		24	8 43 5.50	N.23 17 14.3	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>TUESDAY 21.</i>				<i>THURSDAY 23.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	8 43 5.50	N.23 17 14.3	92.52	0	10 19 50.89	N.14 20 14.4	127.61
1	8 45 15.71	23 7 59.2	93.53	1	10 21 43.51	14 7 28.7	128.09
2	8 47 25.48	22 58 38.0	94.53	2	10 23 35.86	13 54 40.2	128.55
3	8 49 34.82	22 49 10.8	95.52	3	10 25 27.94	13 41 48.9	129.00
4	8 51 43.73	22 39 37.7	96.49	4	10 27 19.76	13 28 54.9	129.45
5	8 53 52.20	22 29 58.7	97.45	5	10 29 11.31	13 15 58.2	129.88
6	8 56 0.25	22 20 14.0	98.40	6	10 31 2.60	13 2 58.9	130.31
7	8 58 7.83	22 10 23.6	99.34	7	10 32 53.65	12 49 57.0	130.72
8	9 0 15.08	22 0 27.5	100.26	8	10 34 44.45	12 36 52.7	131.13
9	9 2 21.86	21 50 26.0	101.17	9	10 36 35.00	12 23 45.9	131.53
10	9 4 28.23	21 40 19.0	102.07	10	10 38 25.31	12 10 36.7	131.92
11	9 6 34.18	21 30 6.6	102.95	11	10 40 15.39	11 57 25.1	132.30
12	9 8 39.71	21 19 48.9	103.82	12	10 42 5.24	11 44 11.3	132.67
13	9 10 44.83	21 9 26.0	104.67	13	10 43 54.86	11 30 55.3	133.04
14	9 12 49.55	20 58 57.9	105.52	14	10 45 44.27	11 17 37.0	133.40
15	9 14 53.86	20 48 24.8	106.36	15	10 47 33.45	11 4 16.7	133.74
16	9 16 57.76	20 37 46.7	107.18	16	10 49 22.42	10 50 54.2	134.08
17	9 19 1.27	20 27 3.6	107.99	17	10 51 11.19	10 37 29.7	134.42
18	9 21 4.38	20 16 15.7	108.79	18	10 52 59.75	10 24 3.2	134.74
19	9 23 7.10	20 5 22.9	109.57	19	10 54 48.11	10 10 34.7	135.06
20	9 25 9.43	19 54 25.5	110.35	20	10 56 36.27	9 57 4.4	135.37
21	9 27 11.37	19 43 23.4	111.11	21	10 58 24.24	9 43 32.2	135.67
22	9 29 12.93	19 32 16.8	111.86	22	11 0 12.02	9 29 58.2	135.96
23	9 31 14.11	N.19 21 5.6	112.60	23	11 1 59.63	N. 9 16 22.4	136.24
<i>WEDNESDAY 22.</i>				<i>FRIDAY 24.</i>			
0	9 33 14.91	N.19 9 50.0	113.33	0	11 3 47.05	N. 9 2 45.0	136.52
1	9 35 15.34	18 58 30.0	114.04	1	11 5 34.30	8 49 5.9	136.79
2	9 37 15.40	18 47 5.8	114.75	2	11 7 21.38	8 35 25.1	137.05
3	9 39 15.10	18 35 37.3	115.44	3	11 9 8.30	8 21 42.8	137.31
4	9 41 14.43	18 24 4.6	116.13	4	11 10 55.06	8 7 58.9	137.55
5	9 43 13.40	18 12 27.8	116.80	5	11 12 41.66	7 54 13.6	137.79
6	9 45 12.02	18 0 47.0	117.46	6	11 14 28.10	7 40 26.9	138.02
7	9 47 10.29	17 49 2.3	118.11	7	11 16 14.40	7 26 38.7	138.24
8	9 49 8.21	17 37 13.6	118.75	8	11 18 0.56	7 12 49.3	138.45
9	9 51 5.78	17 25 21.1	119.38	9	11 19 46.58	6 58 58.6	138.66
10	9 53 3.02	17 13 24.8	120.00	10	11 21 32.46	6 45 6.6	138.86
11	9 54 59.92	17 1 24.7	120.61	11	11 23 18.22	6 31 13.4	139.05
12	9 56 56.49	16 49 21.1	121.21	12	11 25 3.85	6 17 19.1	139.21
13	9 58 52.73	16 37 13.9	121.80	13	11 26 49.36	6 3 23.7	13
14	10 0 48.65	16 25 3.1	122.37	14	11 28 34.75	5 49 27.3	
15	10 2 44.24	16 12 48.8	122.94	15	11 30 20.03	5 35 29.8	
16	10 4 39.52	16 0 31.2	123.50	16	11 32 5.20	5 21 31.4	
17	10 6 34.50	15 48 10.2	124.05	17	11 33 50.27	5 7 32.0	
18	10 8 29.16	15 35 45.9	124.59	18	11 35 35.24	4 53 31.8	
19	10 10 23.52	15 23 18.4	125.11	19	11 37 20.12	4 39 30	
20	10 12 17.58	15 10 47.7	125.63	20	11 39 4.90	4 25 28	
21	10 14 11.34	14 58 13.9	126.14	21	11 40 49.60	4 11 2f	
22	10 16 4.81	14 45 37.1	126.64	22	11 42 34.22	3 57	
23	10 17 57.99	14 32 57.2	127.13	23	11 44 18.76	3 43	
24	10 19 50.89	N.14 20 14.4		24	11 46 3.22	N. 3 20	

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SATURDAY 25.</i>				<i>MONDAY 27.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	11 46 3 ^{.22}	N. 3 29 14 ^{.3}	140 ^{.86}	0	13 9 33 ^{.35}	S. 7 44 25 ^{.5}	136 ^{.93}
1	11 47 47 ^{.62}	3 15 9 ^{.1}	140 ^{.95}	1	13 11 19 ^{.31}	7 58 7 ^{.1}	136 ^{.66}
2	11 49 31 ^{.95}	3 1 3 ^{.4}	141 ^{.03}	2	13 13 5 ^{.41}	8 11 47 ^{.1}	136 ^{.39}
3	11 51 16 ^{.22}	2 46 57 ^{.2}	141 ^{.11}	3	13 14 51 ^{.64}	8 25 25 ^{.4}	136 ^{.11}
4	11 53 0 ^{.43}	2 32 50 ^{.5}	141 ^{.18}	4	13 16 38 ^{.01}	8 39 2 ^{.0}	135 ^{.82}
5	11 54 44 ^{.59}	2 18 43 ^{.5}	141 ^{.24}	5	13 18 24 ^{.52}	8 52 37 ^{.0}	135 ^{.52}
6	11 56 28 ^{.71}	2 4 36 ^{.0}	141 ^{.29}	6	13 20 11 ^{.17}	9 6 10 ^{.1}	135 ^{.21}
7	11 58 12 ^{.78}	1 50 28 ^{.3}	141 ^{.33}	7	13 21 57 ^{.98}	9 19 41 ^{.4}	134 ^{.90}
8	11 59 56 ^{.81}	1 36 20 ^{.3}	141 ^{.37}	8	13 23 44 ^{.94}	9 33 10 ^{.8}	134 ^{.58}
9	12 1 40 ^{.80}	1 22 12 ^{.0}	141 ^{.40}	9	13 25 32 ^{.06}	9 46 38 ^{.3}	134 ^{.25}
10	12 3 24 ^{.77}	1 8 3 ^{.6}	141 ^{.43}	10	13 27 19 ^{.34}	10 0 3 ^{.8}	133 ^{.91}
11	12 5 8 ^{.70}	0 53 55 ^{.1}	141 ^{.44}	11	13 29 6 ^{.78}	10 13 27 ^{.2}	133 ^{.56}
12	12 6 52 ^{.61}	0 39 46 ^{.4}	141 ^{.45}	12	13 30 54 ^{.39}	10 26 48 ^{.6}	133 ^{.21}
13	12 8 36 ^{.51}	0 25 37 ^{.7}	141 ^{.45}	13	13 32 42 ^{.18}	10 40 7 ^{.9}	132 ^{.85}
14	12 10 20 ^{.39}	N. 0 11 29 ^{.0}	141 ^{.45}	14	13 34 30 ^{.14}	10 53 24 ^{.9}	132 ^{.47}
15	12 12 4 ^{.26}	S. 0 2 39 ^{.7}	141 ^{.44}	15	13 36 18 ^{.28}	11 6 39 ^{.8}	132 ^{.09}
16	12 13 48 ^{.12}	0 16 48 ^{.3}	141 ^{.42}	16	13 38 6 ^{.60}	11 19 52 ^{.3}	131 ^{.70}
17	12 15 31 ^{.99}	0 30 56 ^{.9}	141 ^{.39}	17	13 39 55 ^{.11}	11 33 2 ^{.6}	131 ^{.30}
18	12 17 15 ^{.85}	0 45 5 ^{.2}	141 ^{.36}	18	13 41 43 ^{.81}	11 46 10 ^{.4}	130 ^{.90}
19	12 18 59 ^{.73}	0 59 13 ^{.4}	141 ^{.32}	19	13 43 32 ^{.70}	11 59 15 ^{.8}	130 ^{.49}
20	12 20 43 ^{.61}	1 13 21 ^{.3}	141 ^{.27}	20	13 45 21 ^{.79}	12 12 18 ^{.7}	130 ^{.06}
21	12 22 27 ^{.51}	1 27 28 ^{.9}	141 ^{.21}	21	13 47 11 ^{.08}	12 25 19 ^{.1}	129 ^{.63}
22	12 24 11 ^{.43}	1 41 36 ^{.2}	141 ^{.15}	22	13 49 0 ^{.58}	12 38 16 ^{.8}	129 ^{.19}
23	12 25 55 ^{.37}	S. 1 55 43 ^{.1}	141 ^{.08}	23	13 50 50 ^{.29}	S. 12 51 12 ^{.0}	128 ^{.74}
<i>SUNDAY 26.</i>				<i>TUESDAY 28.</i>			
0	12 27 39 ^{.34}	S. 2 9 49 ^{.6}	141 ^{.01}	0	13 52 40 ^{.21}	S. 13 4 4 ^{.4}	128 ^{.28}
1	12 29 23 ^{.34}	2 23 55 ^{.7}	140 ^{.92}	1	13 54 30 ^{.34}	13 16 54 ^{.1}	127 ^{.81}
2	12 31 7 ^{.38}	2 38 1 ^{.2}	140 ^{.83}	2	13 56 20 ^{.69}	13 29 40 ^{.9}	127 ^{.33}
3	12 32 51 ^{.45}	2 52 6 ^{.2}	140 ^{.73}	3	13 58 11 ^{.26}	13 42 25 ^{.0}	126 ^{.85}
4	12 34 35 ^{.57}	3 6 10 ^{.6}	140 ^{.63}	4	14 0 2 ^{.06}	13 55 6 ^{.1}	126 ^{.35}
5	12 36 19 ^{.74}	3 20 14 ^{.4}	140 ^{.52}	5	14 1 53 ^{.08}	14 7 44 ^{.2}	125 ^{.85}
6	12 38 3 ^{.96}	3 34 17 ^{.5}	140 ^{.40}	6	14 3 44 ^{.34}	14 20 19 ^{.3}	125 ^{.34}
7	12 39 48 ^{.23}	3 48 19 ^{.9}	140 ^{.27}	7	14 5 35 ^{.83}	14 32 51 ^{.3}	124 ^{.83}
8	12 41 32 ^{.57}	4 2 21 ^{.5}	140 ^{.13}	8	14 7 27 ^{.56}	14 45 20 ^{.2}	124 ^{.28}
9	12 43 16 ^{.97}	4 16 22 ^{.3}	139 ^{.99}	9	14 9 19 ^{.53}	14 57 45 ^{.8}	123 ^{.7}
10	12 45 1 ^{.43}	4 30 22 ^{.2}	139 ^{.84}	10	14 11 11 ^{.74}	15 10 8 ^{.3}	123 ^{.1}
11	12 46 45 ^{.97}	4 44 21 ^{.2}	139 ^{.68}	11	14 13 4 ^{.20}	15 22 27 ^{.4}	122 ^{.6}
12	12 48 30 ^{.59}	4 58 19 ^{.3}	139 ^{.51}	12	14 14 56 ^{.91}	15 34 43 ^{.2}	122 ^{.0}
13	12 50 15 ^{.28}	5 12 16 ^{.4}	139 ^{.34}	13	14 16 49 ^{.87}	15 46 55 ^{.6}	121 ^{.4}
14	12 52 0 ^{.06}	5 26 12 ^{.4}	139 ^{.16}	14	14 18 43 ^{.10}	15 59 4 ^{.4}	120 ^{.8}
15	12 53 44 ^{.93}	5 40 7 ^{.4}	138 ^{.97}	15	14 20 36 ^{.58}	16 11 9 ^{.8}	120 ^{.2}
16	12 55 29 ^{.89}	5 54 1 ^{.2}	138 ^{.77}	16	14 22 30 ^{.32}	16 23 11 ^{.6}	119 ^{.6}
17	12 57 14 ^{.95}	6 7 53 ^{.8}	138 ^{.57}	17	14 24 24 ^{.32}	16 35 9 ^{.7}	119 ^{.0}
18	12 59 0 ^{.10}	6 21 45 ^{.2}	138 ^{.36}	18	14 26 18 ^{.60}	16 47 4 ^{.1}	118 ^{.4}
19	13 0 45 ^{.36}	6 35 35 ^{.4}	138 ^{.14}	19	14 28 13 ^{.14}	16 58 54 ^{.7}	117 ^{.8}
20	13 2 30 ^{.73}	6 49 24 ^{.2}	137 ^{.91}	20	14 30 7 ^{.96}	17 10 41 ^{.6}	117 ^{.1}
21	13 4 16 ^{.21}	7 3 11 ^{.7}	137 ^{.68}	21	14 32 3 ^{.05}	17 22 24 ^{.5}	116 ^{.5}
22	13 6 1 ^{.80}	7 16 57 ^{.8}	137 ^{.44}	22	14 33 58 ^{.42}	17 34 3 ^{.6}	115 ^{.8}
23	13 7 47 ^{.52}	7 30 42 ^{.4}	137 ^{.19}	23	14 35 54 ^{.07}	17 45 38 ^{.6}	115 ^{.1}
24	13 9 33 ^{.35}	S. 7 44 25 ^{.5}		24	14 37 50 ^{.00}	S. 17 57 9 ^{.6}	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

hr.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>WEDNESDAY 29.</i>				<i>FRIDAY 31.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	14 37 50.00	S. 17 57 9.6	114.48	0	16 16 42.46	S. 25 30 17.1	65.34
1	14 39 46.22	18 8 36.5	113.78	1	16 18 54.00	25 37 13.1	68.14
2	14 41 42.73	18 19 59.2	113.08	2	16 21 5.86	25 44 2.0	66.93
3	14 43 39.33	18 31 17.7	112.36	3	16 23 18.03	25 50 43.5	65.71
4	14 45 36.62	18 42 31.8	111.64	4	16 25 30.52	25 57 17.8	64.48
5	14 47 34.01	18 53 41.7	110.90	5	16 27 43.32	26 3 44.7	63.25
6	14 49 31.70	19 4 47.1	110.16	6	16 29 56.42	26 10 4.2	62.00
7	14 51 29.69	19 15 48.0	109.40	7	16 32 9.83	26 16 16.2	60.74
8	14 53 27.98	19 26 44.4	108.64	8	16 34 23.54	26 22 20.6	59.47
9	14 55 26.58	19 37 36.3	107.86	9	16 36 37.56	26 28 17.5	58.20
10	14 57 25.48	19 48 23.4	107.07	10	16 38 51.87	26 34 6.7	56.91
11	14 59 24.69	19 59 5.8	106.27	11	16 41 6.47	26 39 48.1	55.62
12	15 1 24.21	20 9 43.5	105.47	12	16 43 21.37	26 45 21.8	54.31
13	15 3 24.04	20 20 16.3	104.65	13	16 45 36.57	26 50 47.7	52.99
14	15 5 24.19	20 30 44.2	103.82	14	16 47 52.04	26 56 5.6	51.67
15	15 7 24.65	20 41 7.2	102.98	15	16 50 7.81	27 1 15.6	50.34
16	15 9 25.43	20 51 25.1	102.13	16	16 52 23.85	27 6 17.7	48.99
17	15 11 26.52	21 1 37.9	101.27	17	16 54 40.17	27 11 11.6	47.64
18	15 13 27.94	21 11 45.6	100.40	18	16 56 56.77	27 15 57.5	46.28
19	15 15 29.68	21 21 48.0	99.52	19	16 59 13.63	27 20 35.2	44.92
20	15 17 31.73	21 31 45.1	98.63	20	17 1 30.76	27 25 4.7	43.54
21	15 19 34.11	21 41 36.9	97.72	21	17 3 48.15	27 29 26.0	42.16
22	15 21 36.82	21 51 23.2	96.81	22	17 6 5.79	27 33 38.9	40.77
23	15 23 39.85	S. 22 1 4.1	95.89	23	17 8 23.69	S. 27 37 43.5	39.36
<i>THURSDAY 30.</i>				<i>SATURDAY, NOV. 1.</i>			
0	15 25 43.21	S. 22 10 39.4	94.95	0	17 10 41.84	S. 27 41 39.7	
1	15 27 46.89	22 20 9.1	94.00				
2	15 29 50.91	22 29 33.1	93.04				
3	15 31 55.25	22 38 51.3	92.07				
4	15 33 59.92	22 48 3.8	91.10				
5	15 36 4.92	22 57 10.4	90.11				
6	15 38 10.25	23 6 11.0	89.11				
7	15 40 15.90	23 15 5.7	88.10				
8	15 42 21.89	23 23 54.3	87.08				
9	15 44 28.21	23 32 36.8	86.05				
10	15 46 34.86	23 41 13.1	85.01				
11	15 48 41.84	23 49 43.2	83.96				
12	15 50 49.16	23 58 6.9	82.90				
13	15 52 56.80	24 6 24.3	81.83				
14	15 55 4.78	24 14 35.3	80.74				
15	15 57 13.08	24 22 39.7	79.65				
16	15 59 21.71	24 30 37.6	78.55				
17	16 1 30.67	24 38 28.9	77.43				
18	16 3 39.95	24 46 13.5	76.31				
19	16 5 49.56	24 53 51.4	75.17				
20	16 7 59.50	25 1 22.4	74.				
21	16 10 9.76	25 8 46.5	72				
22	16 12 20.34	25 16 3.7	7				
23	16 14 31.24	25 23 13.9					
24	16 16 42.46	S. 25 30 17.1					

PHASES OF THE MOON.

		<i>d h m</i>
☾	<i>First Quarter</i> - -	6 17 37.6
☾	- -	13 10 59.0
☾	- -	20 6 6.1
☾	- -	28 9 54.4

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.			III ^h .			VI ^h .			IX ^h .						
			°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.
1	SUN	W.	25	21	1	3440	26	42	32	3438	28	4	6	3434	29	25	44	
	Antares	E.	34	2	45	3063	32	33	50	3060	31	4	52	3058	29	35	51	
	Mars	E.	36	9	33	3346	34	46	15	3346	33	22	57	3345	31	59	37	
	α Aquilæ	E.	87	18	50	3903	86	5	33	3904	84	52	17	3905	83	39	2	
2	SUN	W.	36	14	49	3412	37	36	52	3408	38	59	0	3403	40	21	13	
	α Aquilæ	E.	77	33	37	3930	76	20	48	3937	75	8	6	3945	73	55	32	
	Fomalhaut	E.	104	5	27	3254	102	40	22	3247	101	15	9	3241	99	49	49	
3	SUN	W.	47	13	57	3367	48	36	51	3359	49	59	54	3352	51	23	5	
	Venus	W.	27	18	24	3476	28	39	15	3468	30	0	15	3460	31	21	24	
	α Aquilæ	E.	67	55	25	4019	66	44	4	4036	65	33	0	4055	64	22	15	
	Fomalhaut	E.	92	41	6	3201	91	14	58	3194	89	48	42	3187	88	22	17	
4	SUN	W.	58	21	27	3300	59	45	39	3289	61	10	3	3279	62	34	39	
	Venus	W.	38	9	41	3404	39	31	53	3393	40	54	18	3383	42	16	54	
	α Aquilæ	E.	58	34	6	4212	57	25	51	4248	56	18	10	4287	55	11	5	
	Fomalhaut	E.	81	8	8	3145	79	40	53	3138	78	13	29	3131	76	45	57	
	α Pegasi	E.	102	32	51	3262	101	7	55	3250	99	42	45	3237	98	17	20	
	Jupiter	E.	113	15	52	2889	111	43	19	2880	110	10	34	2870	108	37	37	
5	SUN	W.	69	40	58	3209	71	6	57	3195	72	33	12	3183	73	59	42	
	Venus	W.	49	13	19	3309	50	37	20	3296	52	1	36	3282	53	26	8	
	Fomalhaut	E.	69	26	3	3088	67	57	38	3082	66	29	6	3074	65	0	25	
	α Pegasi	E.	91	6	36	3164	89	39	44	3152	88	12	37	3140	86	45	16	
	Jupiter	E.	100	49	34	2806	99	15	14	2795	97	40	39	2782	96	5	48	
	SUN	W.	81	16	32	3094	82	44	49	3078	84	13	25	3062	85	42	21	
6	Venus	W.	60	33	8	3192	61	59	27	3176	63	26	5	3158	64	53	4	
	Antares	W.	26	48	11	2746	28	23	50	2731	29	59	48	2716	31	36	7	
	Mars	W.	21	26	29	3039	22	55	54	3018	24	25	45	2998	25	56	1	
	Fomalhaut	E.	57	35	14	3042	56	5	53	3039	54	36	29	3037	53	7	2	
	α Pegasi	E.	79	25	1	3072	77	56	17	3061	76	27	20	3051	74	58	10	
	Jupiter	E.	88	7	15	2702	86	30	38	2687	84	53	41	2673	83	16	25	
	SUN	W.	93	12	17	2958	94	43	22	2940	96	14	50	2921	97	46	42	
	Venus	W.	72	13	12	3053	73	42	19	3034	75	11	49	3015	76	41	43	
7	Antares	W.	39	42	55	2621	41	21	22	2603	43	0	13	2586	44	39	27	
	Mars	W.	33	33	23	2883	35	6	4	2863	36	39	10	2845	38	12	40	
	α Pegasi	E.	67	29	19	2996	65	59	1	2989	64	28	34	2982	62	57	59	
	Jupiter	E.	75	4	48	2578	73	25	23	2561	71	45	35	2545	70	5	24	
	α Arietis	E.	108	38	49	2668	107	1	26	2651	105	23	40	2632	103	45	29	
	SUN	W.	105	32	0	2807	107	6	19	2788	108	41	2	2768	110	16	12	
8	Venus	W.	84	17	14	2898	85	49	35	2879	87	22	21	2859	88	55	33	
	Antares	W.	53	1	39	2480	54	43	21	2462	56	25	27	2443	58	8	0	
	Mars	W.	46	6	31	2728	47	42	34	2708	49	19	3	2689	50	55	58	
	α Pegasi	E.	55	23	54	2969	53	53	2	2973	52	22	15	2979	50	51	36	
	Jupiter	E.	61	38	25	2440	59	55	47	2422	58	12	44	2404	56	29	15	
	α Arietis	E.	95	28	25	2524	93	47	45	2505	92	6	39	2487	90	25	8	
9	SUN	W.	118	18	28	2651	119	56	14	2632	121	34	26	2612	123	13	4	
	Venus	W.	96	48	0	2739	98	23	48	2719	100	0	2	2700	101	36	42	
	Antares	W.	66	47	12	2335	68	32	21	2317	70	17	56	2299	72	3	57	

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		LUNAR DISTANCES.												
			Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.					
			° ' "		° ' "		° ' "		° ' "		° ' "		° ' "		° ' "
1	SUN	W.	30 47 25	3428	32 9 10	3424	33 30 59	3421	34 52 52	3417					
	Antares	E.	28 6 47	3052	26 37 39	3050	25 8 28	3046	23 39 12	3043					
	Mars	E.	30 36 16	3342	29 12 53	3342	27 49 30	3340	26 26 5	3339					
	α Aquilæ	E.	82 25 49	3910	81 12 39	3914	79 59 34	3918	78 46 32	3924					
2	SUN	W.	41 43 32	3392	43 5 58	3386	44 28 30	3379	45 51 10	3373					
	α Aquilæ	E.	72 43 8	3965	71 30 54	3976	70 18 51	3989	69 7 1	4004					
	Fomalhaut	E.	98 24 20	3228	96 58 44	3220	95 32 59	3214	94 7 7	3207					
3	SUN	W.	52 46 26	3336	54 9 56	3327	55 33 36	3319	56 57 26	3309					
	Venus	W.	32 42 43	3443	34 4 11	3433	35 25 50	3423	36 47 40	3414					
	α Aquilæ	E.	63 11 49	4098	62 1 45	4123	60 52 5	4150	59 42 52	4179					
	Fomalhaut	E.	86 55 44	3173	85 29 3	3166	84 2 13	3159	82 35 15	3152					
4	SUN	W.	63 59 28	3257	65 24 30	3246	66 49 45	3234	68 15 14	3221					
	Venus	W.	43 39 44	3360	45 2 46	3347	46 26 3	3335	47 49 34	3323					
	α Aquilæ	E.	54 4 40	4378	52 58 59	4429	51 54 4	4486	50 50 0	4550					
	Fomalhaut	E.	75 18 15	3116	73 50 25	3109	72 22 26	3102	70 54 19	3095					
	α Pegasi	E.	96 51 40	3213	95 25 46	3200	93 59 37	3188	92 33 13	3177					
	Jupiter	E.	107 4 27	2851	105 31 5	2840	103 57 29	2829	102 23 39	2818					
5	SUN	W.	75 26 29	3154	76 53 33	3139	78 20 55	3125	79 48 34	3110					
	Venus	W.	54 50 57	3253	56 16 3	3239	57 41 26	3223	59 7 8	3208					
	Fomalhaut	E.	63 31 36	3063	62 2 41	3056	60 33 38	3051	59 4 29	3047					
	α Pegasi	E.	85 17 41	3117	83 49 52	3105	82 21 49	3094	80 53 32	3083					
	Jupiter	E.	94 30 40	2757	92 55 16	2744	91 19 34	2730	89 43 34	2716					
6	SUN	W.	87 11 38	3029	88 41 15	3011	90 11 14	2994	91 41 34	2976					
	Venus	W.	66 20 23	3124	67 48 3	3107	69 16 4	3089	70 44 27	3071					
	Antares	W.	33 12 46	2686	34 49 45	2669	36 27 7	2653	38 4 50	2637					
	Mars	W.	27 26 41	2959	28 57 45	2939	30 29 14	2921	32 1 6	2902					
	Fomalhaut	E.	51 37 33	3035	50 8 4	3036	48 38 36	3039	47 9 11	3043					
	α Pegasi	E.	73 28 47	3030	71 59 12	3021	70 29 25	3012	68 59 27	3004					
	Jupiter	E.	81 38 48	2642	80 0 50	2627	78 22 31	2611	76 43 51	2594					
7	SUN	W.	99 18 57	2884	100 51 36	2866	102 24 39	2846	103 58 7	2827					
	Venus	W.	78 12 1	2977	79 42 42	2957	81 13 48	2938	82 45 19	2919					
	Antares	W.	46 19 5	2552	47 59 6	2533	49 39 33	2516	51 20 24	2499					
	Mars	W.	39 46 36	2806	41 20 56	2786	42 55 42	2767	44 30 53	2747					
	α Pegasi	E.	61 27 18	2973	59 56 31	2970	58 25 40	2968	56 54 47	2968					
	Jupiter	E.	68 24 48	2510	66 43 49	2502	65 12 26	2475	63 20 38	2457					
	α Arietis	E.	102 6 54	2596	100 27 5	2580	98 12 26	2560	97 8 39	2543					
8	SUN	W.	111 51 47	2729	113 27 4	2711	115 11 14	2694	116 41 9	2671					
	Venus	W.	90 29 10	2819	92 3	2801	94 13 14	2783	95 12 39	2759					
	Antares	W.	59 50 58	2408	61 34	2390	63 16 17	2372	64 6 42	2353					
	Mars	W.	52 33 20	2649	54 11	2631	56 1 12	2613	57 11 17	2591					
	α Pegasi	E.	49 21 7	2999	47 5	2981	49 15 16	2963	51 25 3057						
	Jupiter	E.	54 45 20	2368	53	2350	55 1 12	2332	56 11 17	2314					
	α Arietis	E.	88 43 11	2451	87	2433	89 7 12	2415	90 17 17	2397					
9	SUN	W.	124 52 8	2574	126 27 12	2556	128 11 14	2538	129 41 9	2520					
	Venus	W.	103 13 47	2661	105 3	2643	107 13 14	2625	108 12 39	2606					
	Antares	W.	73 50 25	2264	75 11	2246	77 1 12	2228	78 11 17	2212					

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
9	Mars W.	59 7 10	2572	60 46 44	2553	62 26 44	2533	64 7 11	2514
	α Pegasi E.	43 22 23	3086	41 53 56	3121	40 26 12	3164	38 59 20	3215
	Jupiter E.	47 45 20	2296	45 59 15	2278	44 12 44	2260	42 25 46	2243
	α Arietis E.	81 51 8	2379	80 7 3	2361	78 22 33	2344	76 37 38	2327
10	Antares W.	81 0 31	2195	82 49 6	2180	84 38 4	2164	86 27 26	2148
	Mars W.	72 35 52	2424	74 18 52	2407	76 2 16	2391	77 46 4	2374
	Jupiter E.	33 24 34	2159	31 35 4	2143	29 45 10	2128	27 54 53	2112
	α Arietis E.	67 46 58	2247	65 59 41	2232	64 12 1	2218	62 24 1	2204
	Aldebaran E.	98 19 54	2259	96 32 54	2242	94 45 29	2225	92 57 39	2210
11	Antares W.	95 40 0	2077	97 31 34	2064	99 23 28	2053	101 15 40	2041
	Mars W.	86 30 45	2300	88 16 44	2287	90 3 3	2274	91 49 40	2262
	α Aquilæ W.	52 52 47	3558	54 12 7	3477	55 32 57	3401	56 55 12	3333
	α Arietis E.	53 19 10	2147	51 29 23	2138	49 39 21	2130	47 49 8	2124
	Aldebaran E.	83 52 57	2140	82 2 59	2128	80 12 43	2117	78 22 10	2106
	Saturn E.	120 16 59	2116	118 26 24	2103	116 35 29	2089	114 44 13	2077
12	Mars W.	100 46 50	2213	102 34 58	2206	104 23 17	2198	106 11 47	2193
	α Aquilæ W.	64 4 16	3069	65 33 4	3030	67 2 40	2993	68 33 1	2961
	Fomalhaut W.	32 38 57	2753	34 14 26	2675	35 51 39	2608	37 30 23	2550
	α Arietis E.	38 36 10	2112	36 45 29	2116	34 54 54	2122	33 4 28	2131
	Aldebaran E.	69 5 44	2066	67 13 52	2060	65 21 52	2056	63 29 45	2053
	Saturn E.	105 23 30	2026	103 30 36	2018	101 37 30	2011	99 44 13	2005
13	α Aquilæ W.	76 13 34	2848	77 47 0	2834	79 20 44	2822	80 54 43	2814
	Fomalhaut W.	46 1 3	2356	47 45 41	2331	49 30 55	2310	51 16 40	2293
	α Pegasi W.	29 21 24	3627	30 39 29	3444	32 0 56	3291	33 25 18	3161
	Aldebaran E.	54 8 29	2053	52 16 18	2058	50 24 14	2063	48 32 18	2070
	Saturn E.	90 15 48	1986	88 21 52	1985	86 27 54	1985	84 33 56	1986
	Pollux E.	97 23 1	1958	95 28 20	1956	93 33 36	1956	91 38 53	1957
14	Fomalhaut W.	60 10 40	2241	61 58 7	2237	63 45 40	2234	65 33 17	2234
	α Pegasi W.	40 59 34	2751	42 35 6	2702	44 11 43	2660	45 49 17	2625
	Jupiter W.	27 16 46	1938	29 11 59	1943	31 7 4	1949	33 1 59	1953
	Aldebaran E.	39 16 21	2135	37 26 15	2156	35 36 41	2179	33 47 42	2206
	Saturn E.	75 4 48	2002	73 11 17	2007	71 17 54	2014	69 24 42	2022
	Pollux E.	82 5 54	1972	80 11 35	1977	78 17 24	1983	76 23 23	1991
15	Fomalhaut W.	74 30 46	2253	76 17 55	2261	78 4 52	2270	79 51 36	2280
	α Pegasi W.	54 6 51	2520	55 47 37	2510	57 28 37	2502	59 9 47	2497
	Jupiter W.	42 33 27	2001	44 27 0	2012	46 20 15	2024	48 13 11	2037
	Saturn E.	60 2 6	2072	58 10 24	2084	56 19 1	2098	54 27 58	2112
	Pollux E.	66 56 27	2036	65 3 49	2048	63 11 29	2059	61 19 27	2072
	Regulus E.	103 38 7	2043	101 45 39	2054	99 53 29	2066	98 1 37	2078
16	Fomalhaut W.	88 41 7	2344	90 26 2	2360	92 10 34	2377	93 54 42	2394
	α Pegasi W.	67 36 12	2506	69 17 17	2513	70 58 12	2521	72 38 56	2531
	Jupiter W.	57 32 47	2107	59 23 36	2122	61 14 1	2138	63 4 2	2155
	α Arietis W.	24 1 4	2398	25 44 41	2382	27 28 41	2372	29 12 56	2367
	Saturn E.	45 18 30	2194	43 29 53	2213	41 41 44	2233	39 54 5	2253
	Pollux E.	52 4 23	2143	50 14 29	2158	48 24 58	2174	46 35 52	2191
	Regulus E.	88 47 19	2148	86 57 33	2164	85 8 11	2180	83 19 13	2196

MEAN TIME.

LUNAR DISTANCES.

Day of the Month	Star's Name and Position.		Midnight.	XV ^h .			XVIII ^h .			XXI ^h .		
				P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.				
9	Mars	W.	65 48 4	2496	67 29 23	2478	69 11 7	2460	70 53 17	2442		
	α Pegasi	E.	37 33 29	3277	36 8 51	3351	34 45 38	3440	33 24 7	3545		
	Jupiter	E.	40 38 23	2226	38 50 34	2208	37 2 19	2192	35 13 39	2175		
	α Arietis	E.	74 52 18	2310	73 6 33	2294	71 20 25	2278	69 33 53	2262		
10	Antares	W.	88 17 12	2133	90 7 21	2118	91 57 53	2104	93 48 46	2090		
	Mars	W.	79 30 16	2359	81 14 50	2343	82 59 47	2328	84 45 6	2314		
	Jupiter	E.	26 4 12	2097	24 13 8	2083	22 21 42	2069	20 29 55	2055		
	α Arietis	E.	60 35 40	2191	58 46 59	2179	56 58 0	2167	55 8 43	2157		
	Aldebaran	E.	91 9 27	2195	89 20 52	2180	87 31 55	2166	85 42 36	2153		
11	Antares	W.	103 8 10	2030	105 0 57	2020	106 54 0	2010	108 47 18	2001		
	Mars	W.	93 36 35	2251	95 23 46	2241	97 11 13	2231	98 58 55	2222		
	α Aquilæ	W.	58 18 45	3271	59 43 31	3213	61 9 25	3160	62 36 22	3113		
	α Arietis	E.	45 58 45	2118	44 8 13	2114	42 17 35	2111	40 26 53	2111		
	Aldebaran	E.	76 31 20	2097	74 40 16	2087	72 48 57	2079	70 57 26	2072		
	Saturn	E.	112 52 38	2066	111 0 46	2054	109 8 36	2044	107 16 10	2035		
12	Mars	W.	108 0 25	2188	109 49 10	2183	111 38 3	2180	113 27 0	2178		
	α Aquilæ	W.	70 4 3	2932	71 35 41	2907	73 7 51	2884	74 40 30	2865		
	Fomalhaut	W.	39 10 27	2499	40 51 41	2455	42 33 57	2418	44 17 6	2385		
	α Arietis	E.	31 14 17	2145	29 24 26	2162	27 35 1	2186	25 46 12	2217		
	Aldebaran	E.	61 37 33	2051	59 45 18	2050	57 53 1	2050	56 0 44	2051		
	Saturn	E.	97 50 46	2000	95 57 11	1995	94 3 29	1991	92 9 40	1989		
13	α Aquilæ	W.	82 28 53	2808	84 3 11	2804	85 37 33	2802	87 11 58	2804		
	Fomalhaut	W.	53 2 50	2277	54 49 23	2264	56 36 15	2254	58 23 22	2247		
	α Pegasi	W.	34 52 14	3051	36 21 24	2957	37 52 31	2878	39 25 18	2809		
	Aldebaran	E.	46 40 33	2079	44 49 2	2090	42 57 48	2103	41 6 53	2118		
	Saturn	E.	82 39 59	1987	80 46 4	1989	78 52 13	1993	76 58 27	1997		
	Pollux	E.	89 44 10	1958	87 49 29	1960	85 54 52	1963	84 0 20	1967		
14	Fomalhaut	W.	67 20 54	2235	69 8 30	2237	70 56 2	2241	72 43 28	2247		
	α Pegasi	W.	47 27 38	2594	49 6 41	2570	50 46 17	2549	52 26 22	2532		
	Jupiter	W.	34 56 44	1963	36 51 16	1972	38 45 34	1981	40 39 38	1991		
	Aldebaran	E.	31 59 24	2239	30 11 55	2277	28 25 21	2321	26 39 52	2374		
	Saturn	E.	67 31 42	2031	65 38 56	2039	63 46 23	2050	61 54 6	2061		
	Pollux	E.	74 29 34	1998	72 35 56	2007	70 42 32	2016	68 49 22	2025		
15	Fomalhaut	W.	81 38 5	2290	83 24 19	2302	85 10 15	2316	86 55 51	2330		
	α Pegasi	W.	60 51 4	2495	62 32 24	2496	64 13		65 55 0	2501		
	Jupiter	W.	50 5 48	2050	51 58 5	2063	53 5		54 41 35	2092		
	Saturn	E.	52 37 17	2126	50 46 58	2142	48		49 7 33	2176		
	Pollux	E.	59 27 44	2085	57 36 21	2099	5		54 40			
	Regulus	E.	96 10 3	2091	94 18 50	2105			37 2			
16	Fomalhaut	W.	95 38 26	2412	97 21 43	243			16			
	α Pegasi	W.	74 19 26	2541	75 59 42	255			9			
	Jupiter	W.	64 53 38	2171	66 42 49	219			9			
	α Arietis	W.	30 57 18	2366	32 41 42	2						
	Saturn	E.	38 6 56	2275	36 20 19							
	Pollux	E.	44 47 11	2208	42 58 55							
	Regulus	E.	81 30 40	2214	79 42 33							

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P.L. of diff.	III ^b .	P.L. of diff.	VI ^b .	P.L. of diff.	IX ^b .	P.L. of diff.
17	α Pegasi W.	80 58 45	2595	82 37 47	2610	84 16 29	2627	85 54 47	2644
	Jupiter W.	72 7 46	2241	73 55 12	2259	75 42 12	2277	77 28 45	2295
	α Arietis W.	37 54 22	2388	39 38 14	2398	41 21 52	2409	43 5 14	2420
	Pollux E.	37 36 43	2279	35 50 13	2297	34 4 9	2316	32 18 33	2335
	Regulus E.	74 20 43	2284	72 34 20	2302	70 48 23	2321	69 2 54	2340
SUN E.	130 39 24	2589	129 0 14	2608	127 21 30	2628	125 43 13	2648	
18	α Pegasi W.	94 0 19	2739	95 36 7	2760	97 11 28	2780	98 46 22	2801
	Jupiter W.	86 14 43	2389	87 58 33	2408	89 41 57	2427	91 24 54	2447
	α Arietis W.	51 37 20	2493	53 18 43	2509	54 59 44	2525	56 40 22	2542
	Aldebaran W.	22 21 11	2862	23 54 19	2825	25 28 14	2799	27 2 43	2773
	Regulus E.	60 22 15	2434	58 39 29	2453	56 57 10	2473	55 15 19	2493
SUN E.	117 38 35	2749	116 3 0	2770	114 27 53	2789	112 53 11	2809	
19	Jupiter W.	99 53 5	2538	101 33 26	2555	103 13 23	2573	104 52 55	2591
	α Arietis W.	64 57 52	2625	66 36 13	2641	68 14 12	2658	69 51 48	2675
	Aldebaran W.	34 58 53	2759	36 34 14	2763	38 9 31	2769	39 44 40	2775
	Regulus E.	46 52 43	2588	45 13 31	2607	43 34 45	2625	41 56 24	2643
	SUN E.	105 6 17	2910	103 34 11	2930	102 2 30	2949	100 31 13	2969
20	α Arietis W.	77 54 20	2755	39 29 47	2770	81 4 54	2786	82 39 40	2802
	Aldebaran W.	47 37 45	2822	79 11 44	2832	50 45 30	2844	52 19 1	2856
	Regulus E.	33 50 57	2736	42 15 5	2755	30 39 38	2773	29 4 35	2791
	SUN E.	93 0 39	3059	91 31 39	3077	90 3 1	3094	88 34 44	3112
	21	Aldebaran W.	60 3 3	2910	61 35 9	2921	63 7 1	2931	64 38 40
Saturn W.		23 26 35	2974	24 57 20	2972	26 28 8	2971	27 58 57	2970
Pollux W.		15 47 45	2845	17 21 15	2856	18 54 31	2866	20 27 33	2876
SUN E.		81 18 11	3188	79 51 48	3203	78 25 43	3216	76 59 53	3230
22		Aldebaran W.	72 13 39	2992	73 44 2	3001	75 14 14	3010	76 44 15
	Saturn W.	35 32 8	2993	37 2 29	2999	38 32 43	3005	40 2 50	3011
	Pollux W.	28 9 18	2930	29 40 59	2939	31 12 29	2949	32 43 46	2959
	SUN E.	69 54 39	3293	68 30 19	3304	67 6 12	3314	65 42 17	3325
	23	Aldebaran W.	84 11 48	3057	85 40 50	3064	87 9 44	3070	88 38 30
Saturn W.		47 31 40	3038	49 1 6	3043	50 30 25	3048	51 59 38	3054
Pollux W.		40 17 33	2998	41 47 49	3005	43 17 56	3010	44 47 56	3016
SUN E.		58 45 34	3371	57 22 44	3378	56 0 2	3386	54 37 30	3393
24		Aldebaran W.	96 0 32	3104	97 28 37	3109	98 56 36	3113	100 24 30
	Saturn W.	59 24 21	3073	60 53 3	3076	62 21 42	3080	63 50 16	3084
	Pollux W.	52 16 5	3043	53 45 24	3047	55 14 38	3051	56 43 47	3055
	SUN E.	47 46 39	3423	46 24 48	3428	45 3 3	3433	43 41 24	3438
	25	Saturn W.	71 12 23	3093	72 40 41	3094	74 8 58	3096	75 37 13
Pollux W.		64 8 35	3069	65 37 23	3070	67 6 9	3071	68 34 54	3073
Regulus W.		27 36 24	3101	29 4 32	3101	30 32 41	3100	32 0 51	3100
SUN E.		36 54 10	3453	35 32 53	3456	34 11 40	3458	32 50 29	3461
31		SUN E.	28 46 29	3322	30 10 15	3314	31 34 10	3307	32 58 14
	α Aquilæ W.	60 44 17	4138	59 34 52	4170	58 25 58	4205	57 17 37	4240
	Fomalhaut E.	83 55 9	3149	82 27 59	3144	81 0 43	3140	79 33 22	3135
	Jupiter E.	113 13 56	2914	111 41 55	2907	110 9 45	2901	108 37 28	2895

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		LUNAR DISTANCES.																	
			Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.										
	<i>o</i>	<i>i</i>	<i>''</i>		<i>o</i>	<i>i</i>	<i>''</i>		<i>o</i>	<i>i</i>	<i>''</i>		<i>o</i>	<i>i</i>	<i>''</i>		<i>o</i>	<i>i</i>	<i>''</i>	
17	α Pegasi	W.	87	32	43	2661	89	10	15	2680	90	47	22	2699	92	24	3	2718		
	Jupiter	W.	79	14	51	2315	81	0	29	2333	82	45	41	2351	84	30	26	2371		
	α Arietis	W.	44	48	19	2434	46	31	5	2448	48	13	31	2463	49	55	36	2478		
	Pollux	E.	30	33	24	2354	28	48	43	2373	27	4	30	2393	25	20	45	2412		
	Regulus	E.	67	17	51	2358	65	33	16	2377	63	49	8	2396	62	5	28	2415		
	SUN	E.	124	5	23	2669	122	28	1	2688	120	51	5	2709	119	14	37	2729		
18	α Pegasi	W.	100	20	47	2824	101	54	43	2847	103	28	10	2870	105	1	7	2894		
	Jupiter	W.	93	7	24	2464	94	49	28	2482	96	31	6	2501	98	12	18	2519		
	α Arietis	W.	58	20	38	2558	60	0	31	2574	61	40	1	2591	63	19	8	2608		
	Aldebaran	W.	28	37	37	2768	30	12	46	2761	31	48	5	2757	33	23	29	2757		
	Regulus	E.	53	33	54	2512	51	52	57	2530	50	12	26	2549	48	32	21	2569		
	SUN	E.	111	18	56	2831	109	45	8	2851	108	11	46	2870	106	38	49	2890		
19	Jupiter	W.	106	32	3	2607	108	10	48	2625	109	49	9	2641	111	27	8	2658		
	α Arietis	W.	71	29	2	2691	73	5	54	2707	74	42	24	2723	76	18	33	2740		
	Aldebaran	W.	41	19	40	2784	42	54	29	2792	44	29	7	2802	46	3	33	2812		
	Regulus	E.	40	18	29	2662	38	40	58	2681	37	3	53	2700	35	27	13	2718		
	SUN	E.	99	0	20	2986	97	29	50	3005	95	59	44	3023	94	30	0	3042		
20	α Arietis	W.	84	14	7	2816	85	48	14	2830	87	22	3	2844	88	55	34	2859		
	Aldebaran	W.	53	52	18	2866	55	25	21	2877	56	58	9	2888	58	30	43	2899		
	Regulus	E.	27	29	57	2811	25	55	43	2831	24	21	55	2850	22	48	32	2872		
	SUN	E.	87	6	47	3126	85	39	9	3143	84	11	51	3158	82	44	52	3173		
21	Aldebaran	W.	66	10	5	2953	67	41	17	2962	69	12	17	2973	70	43	4	2982		
	Saturn	W.	29	29	44	2975	31	0	28	2979	32	31	7	2983	34	1	41	2989		
	Pollux	W.	22	0	21	2887	23	32	56	2899	25	5	16	2909	26	37	23	2919		
	SUN	E.	75	34	20	3244	74	9	3	3257	72	44	1	3269	71	19	13	3281		
22	Aldebaran	W.	78	14	5	3026	79	43	45	3034	81	13	16	3043	82	42	36	3049		
	Saturn	W.	41	32	51	3016	43	2	44	3022	44	32	29	3027	46	2	8	3033		
	Pollux	W.	34	14	53	2966	35	45	48	2974	37	16	33	2982	38	47	8	2990		
	SUN	E.	64	18	35	3335	62	55	4	3344	61	31	43	3354	60	8	34	3362		
23	Aldebaran	W.	90	7	9	3082	91	35	40	3088	93	4	4	3094	94	32	21	3099		
	Saturn	W.	53	28	45	3057	54	57	47	3062	56	26	43	3066	57	55	34	3069		
	Pollux	W.	46	17	47	3023	47	47	31	3028	49	17	9	3034	50	46	40	3039		
	SUN	E.	53	15	5	3400	51	52	48	3406	50	30	38	3412	49	8	35	3418		
24	Aldebaran	W.	101	52	19	3122	103	20	2	3125	104	47	41	3128	106	15	16	3132		
	Saturn	W.	65	18	47	3085	66	47	15	3087	68	15	40	3090	69	44	2	3091		
	Pollux	W.	58	12	52	3058	59	41	53	3061	61	10	50	3064	62	39	44	3066		
	SUN	E.	42	19	48	3441	40	58	18	3444	39	36	51	3448	38	15	29	3451		
25	Saturn	W.	77	5	27	3097	78	33	40	3098	80	1	52	3097	81	30	5	3098		
	Pollux	W.	70	3	36	3074	71	32	17	3075	73	0	57	3075	74	29	37	3076		
	Regulus	W.	33	29	3	3098	34	57	15	3096	36	25	29	3096	37	53	44	3094		
	SUN	E.	31	29	21	3462	30	8	15	3463	28	47	10	3466	27	26	8	3467		
31	SUN	W.	34	22	27	3291	35	46	49	3282	37	11	21	3274	38	36	3	3265		
	α Aquilæ	E.	56	9	52	4286	55	2	46	4332	53	56	23	4382	52	50	45	4438		
	Fomalhaut	E.	78	5	55	3130	76	38	22	3126	75	10	44	3123	73	43	2	3118		
	Jupiter	E.	107	5	2	2888	105	32	28	2880	103	59	44	2874	102	26	52	2866		

CONFIGURATIONS OF THE SATELLITES OF JUPITER,

At 12^h, MEAN TIME.

Day of the Month.	West.	East.
1	1 ● 3°	○ 2° 4°
2	3° 2° 1°	○ 4°
3	2° 3°	○ 1° 4°
4	1°	○ 2° 3° 4°
5		○ 2° 1° 4° 3°
6	2° 1°	○ 4° 3°
7	4° 3°	○ 1° ● 2°
8	4° 3°	○ 2°
9	4° 3° 2° 1°	○
10	4° 2° 3°	○ 1°
11	4° 1°	○ 2° 3°
12	4°	○ 1° 3°
13	4° 2° 1°	○ 3°
14	4° 3°	○ 1°
15	3° 1°	○ 4° 2°
16	3° 2°	○ 4° ○ 1°
17	2° 3°	○ 1° 4°
18	1°	○ 2° 3° 4°
19		○ 3° 4°
20	2° 1°	○ 3° 4°
21	3° ○	○ 1° 4°
22	3° 1°	○ 4°
23	3° 4° 1°	○ 2°
24	4° 2° 3°	○ ● 1°
25	4° 1°	○ 2° 3°
26	4°	○ 1° 2° 3°
27	4° 2° 1°	○ 3°
28	4° 2°	○ 3° 1°
29	4° 3° 1°	○ 2°
30	3° 4°	○ 2° 1°
31	3° 1° 4°	○ ● 1°

This Table represents, at 12^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars.				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0'.176271.	From Mean Noon of January 1.		
	At Mean Midnight,						Days.	Day of the Year.	Fraction of the Year.
	Logarithm of								
	A	B	C	D					
1	+1.2672	+0.5034	+9.8153	-0.9708	h m s 11 16 32.28	193	274	.750	
2	1.2660	0.5482	9.8168	0.9706	11 12 36.37	194	275	.753	
3	1.2646	0.5887	9.8182	0.9704	11 8 40.47	195	276	.756	
4	+1.2631	+0.6257	+9.8197	-0.9702	11 4 44.56	196	277	.758	
5	1.2614	0.6597	9.8212	0.9699	11 0 48.65	197	278	.761	
6	1.2597	0.6911	9.8227	0.9696	10 56 52.74	198	279	.764	
7	+1.2577	+0.7203	+9.8242	-0.9693	10 52 56.83	199	280	.767	
8	1.2557	0.7475	9.8257	0.9690	10 49 0.93	200	281	.769	
9	1.2535	0.7730	9.8272	0.9686	10 45 5.02	201	282	.772	
10	+1.2511	+0.7970	+9.8287	-0.9682	10 41 9.11	202	283	.775	
11	1.2486	0.8196	9.8302	0.9677	10 37 13.20	203	284	.778	
12	1.2460	0.8410	9.8317	0.9673	10 33 17.29	204	285	.780	
13	+1.2432	+0.8612	+9.8332	-0.9668	10 29 21.39	205	286	.783	
14	1.2403	0.8805	9.8347	0.9663	10 25 25.48	206	287	.786	
15	1.2372	0.8988	9.8363	0.9658	10 21 29.57	207	288	.789	
16	+1.2339	+0.9163	+9.8378	-0.9653	10 17 33.66	208	289	.791	
17	1.2305	0.9330	9.8394	0.9647	10 13 37.75	209	290	.794	
18	1.2270	0.9489	9.8409	0.9641	10 9 41.84	210	291	.797	
19	+1.2232	+0.9641	+9.8423	-0.9635	10 5 45.93	211	292	.799	
20	1.2193	0.9788	9.8441	0.9629	10 1 50.02	212	293	.802	
21	1.2153	0.9928	9.8457	0.9622	9 57 54.12	213	294	.805	
22	+1.2110	+1.0063	+9.8473	-0.9615	9 53 58.21	214	295	.808	
23	1.2066	1.0192	9.8489	0.9609	9 50 2.30	215	296	.810	
24	1.2020	1.0317	9.8505	0.9602	9 46 6.39	216	297	.813	
25	+1.1972	+1.0436	+9.8522	-0.9594	9 42 10.48	217	298	.816	
26	1.1923	1.0552	9.8538	0.9587	9 38 14.57	218	299	.819	
27	1.1871	1.0663	9.8554	0.9580	9 34 18.66	219	300	.821	
28	+1.1817	+1.0770	+9.8571	-0.9572	9 30 22.75	220	301	.824	
29	1.1762	1.0874	9.8587	0.9565	9 26 26.84	221	302	.827	
30	1.1704	1.0973	9.8603	0.9558	9 22 30.93	222	303	.830	
31	1.1644	1.1069	9.8619	0.9551	9 18 35.02	223	304	.832	
32	+1.1582	+1.1162	+9.8635	-0.9543	9 14 39.11	224	305	.835	

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.		
Sat.	1	h m s	s	° ' "	"	m s	m s
Sun.	2	14 27 29.47	9.835	S. 14 35 47.5	47.58	1 7.00	16 17.62
Mon.	3	14 31 25.50	9.868	14 54 49.5	46.97	1 7.11	16 18.15
Tues.	4	14 35 22.33	9.901	15 13 36.8	46.35	1 7.23	16 17.87
Wed.	5	14 39 19.96	9.935	15 32 9.1	45.70	1 7.35	16 16.80
Thur.	6	14 43 18.41	9.970	15 50 25.8	45.03	1 7.46	16 14.92
Frid.	7	14 47 17.68	10.004	16 8 26.6	44.35	1 7.58	16 12.21
Sat.	8	14 51 17.76	10.038	16 26 11.1	43.66	1 7.70	16 8.70
Sun.	9	14 55 18.66	10.073	16 43 38.9	42.95	1 7.82	16 4.37
Mon.	10	14 59 20.40	10.108	17 0 49.6	42.22	1 7.94	15 59.19
Tues.	11	15 3 22.98	10.143	17 17 42.9	41.48	1 8.06	15 53.19
Wed.	12	15 7 26.40	10.178	17 34 18.3	40.72	1 8.18	15 46.34
Thur.	13	15 11 30.67	10.213	17 50 35.5	39.94	1 8.30	15 38.65
Frid.	14	15 15 35.79	10.249	18 6 34.1	39.15	1 8.42	15 30.11
Sat.	15	15 19 41.76	10.284	18 22 13.7	38.35	1 8.54	15 20.73
Sun.	16	15 23 48.59	10.320	18 37 34.0	37.53	1 8.66	15 10.48
Mon.	17	15 27 56.27	10.355	18 52 34.6	36.69	1 8.77	14 59.38
Tues.	18	15 32 4.80	10.391	19 7 15.0	35.83	1 8.89	14 47.44
Wed.	19	15 36 14.18	10.426	19 21 35.0	34.96	1 9.00	14 34.66
Thur.	20	15 40 24.42	10.461	19 35 34.2	34.08	1 9.12	14 21.02
Frid.	21	15 44 35.49	10.496	19 49 12.2	33.18	1 9.23	14 6.54
Sat.	22	15 48 47.39	10.530	20 2 28.5	32.27	1 9.34	13 51.25
Sun.	23	15 53 0.10	10.563	20 15 22.9	31.34	1 9.45	13 35.13
Mon.	24	15 57 13.63	10.596	20 27 54.9	30.39	1 9.56	13 18.21
Tues.	25	16 1 27.94	10.628	20 40 4.3	29.43	1 9.66	13 0.50
Wed.	26	16 5 43.03	10.660	20 51 50.5	28.45	1 9.77	12 42.02
Thur.	27	16 9 58.88	10.691	21 3 13.3	27.46	1 9.87	12 22.78
Frid.	28	16 14 15.46	10.721	21 14 12.3	26.45	1 9.97	12 2.81
Sat.	29	16 18 32.76	10.750	21 24 47.2	25.44	1 10.06	11 42.11
Sun.	30	16 22 50.75	10.778	21 34 57.7	24.40	1 10.16	11 20.71
Mon.	31	16 27 9.41	10.805	21 44 43.4	23.36	1 10.25	10 58.71
Mon.	31	16 31 28.72		S. 21 54 4.1		1 10.33	10 36.01

* Mean Time of the Semidiameter passing may be found by subtracting 0'.19 from the Side

AT MEAN NOON.

Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
	Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
	h m s	° ' "	' "	m s	h m s
1	14 27 32.14	S. 14 36 0.4	16 9.8	16 17.63	14 43 49.77
2	14 31 28.18	14 55 2.3	16 10.1	16 18.15	14 47 46.33
3	14 35 25.02	15 13 49.4	16 10.3	16 17.86	14 51 42.88
4	14 39 22.66	15 32 21.5	16 10.6	16 16.78	14 55 39.44
5	14 43 21.11	15 50 38.0	16 10.8	16 14.89	14 59 36.00
6	14 47 20.38	16 8 38.6	16 11.1	16 12.17	15 3 32.55
7	14 51 20.46	16 26 22.9	16 11.3	16 8.65	15 7 29.11
8	14 55 21.36	16 43 50.4	16 11.6	16 4.31	15 11 25.67
9	14 59 23.10	17 1 0.9	16 11.8	15 59.12	15 15 22.22
10	15 3 25.67	17 17 53.8	16 12.1	15 53.11	15 19 18.78
11	15 7 29.08	17 34 29.0	16 12.3	15 46.25	15 23 15.33
12	15 11 33.33	17 50 45.9	16 12.5	15 38.56	15 27 11.89
13	15 15 38.44	18 6 44.2	16 12.7	15 30.01	15 31 8.45
14	15 19 44.39	18 22 23.5	16 12.9	15 20.62	15 35 5.01
15	15 23 51.20	18 37 43.5	16 13.1	15 10.36	15 39 1.56
16	15 27 58.86	18 52 43.7	16 13.3	14 59.26	15 42 58.12
17	15 32 7.36	19 7 23.9	16 13.5	14 47.31	15 46 54.68
18	15 36 16.72	19 21 43.5	16 13.7	14 34.51	15 50 51.23
19	15 40 26.92	19 35 42.4	16 13.9	14 20.87	15 54 47.79
20	15 44 37.96	19 49 20.0	16 14.0	14 6.39	15 58 44.35
21	15 48 49.82	20 2 36.0	16 14.2	13 51.09	16 2 40.91
22	15 53 2.50	20 15 30.0	16 14.4	13 34.97	16 6 37.46
23	15 57 15.97	20 28 1.7	16 14.6	13 18.05	16 10 34.02
24	16 1 30.24	20 40 10.6	16 14.8	13 0.34	16 14 30.58
25	16 5 45.29	20 51 56.5	16 15.0	12 41.85	16 18 27.14
26	16 10 1.08	21 3 18.9	16 15.1	12 22.61	16 22 12.60
27	16 14 17.61	21 14 17.6	16 15.3	12 2.64	16 26 0.00
28	16 18 34.86	21 24 52.2	16 15.4	11 41.95	16 29 47.15
29	16 22 52.79	21 35 2.3	16 15.6	11 20.00	16 33 34.20
30	16 27 11.39	21 44 47.7	16 15.8	10 58.00	16 37 21.25
31	16 31 30.63	S. 21 54 8.0	16 15.9	10 0.00	16 41 8.30

* The Semidiameter for Apparent Noon may be assumed the s

MEAN TIME.						
Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S		
	Longitude.	Latitude.		Semidiameter.		Horizontal
	Noon.	Noon.	Noon.	Noon.	Midnight.	Noon.
1	219 16 59.8	S.0.35	9.9963952	15 2.6	15 6.5	55 12.5
2	220 17 9.0	0.37	9.9962828	15 10.8	15 15.4	55 42.3
3	221 17 19.8	0.37	9.9961712	15 20.4	15 25.7	56 17.6
4	222 17 32.1	0.35	9.9960605	15 31.4	15 37.4	56 58.1
5	223 17 46.0	0.28	9.9959508	15 43.7	15 50.2	57 43.2
6	224 18 1.3	0.20	9.9958423	15 56.7	16 3.3	58 31.0
7	225 18 18.0	S.0.09	9.9957352	16 9.8	16 16.0	59 18.9
8	226 18 36.2	N.0.03	9.9956296	16 21.7	16 26.9	60 2.7
9	227 18 55.8	0.17	9.9955257	16 31.3	16 34.8	60 37.8
10	228 19 17.0	0.30	9.9954234	16 37.2	16 38.5	60 59.5
11	229 19 39.8	0.43	9.9953230	16 38.5	16 37.2	61 4.2
12	230 20 4.1	0.54	9.9952245	16 34.7	16 31.0	60 50.4
13	231 20 30.0	0.64	9.9951282	16 26.2	16 20.5	60 19.3
14	232 20 57.6	0.72	9.9950339	16 14.0	16 6.9	59 34.4
15	233 21 26.9	0.77	9.9949416	15 59.4	15 51.6	58 40.6
16	234 21 57.9	0.78	9.9948512	15 43.8	15 36.1	57 43.6
17	235 22 30.6	0.77	9.9947628	15 28.7	15 21.6	56 48.1
18	236 23 5.1	0.73	9.9946762	15 15.1	15 9.0	55 58.0
19	237 23 41.4	0.65	9.9945916	15 3.6	14 58.8	55 15.9
20	238 24 19.4	0.56	9.9945086	14 54.7	14 51.2	54 43.2
21	239 24 59.1	0.45	9.9944272	14 48.5	14 46.4	54 20.4
22	240 25 40.5	0.32	9.9943473	14 44.9	14 44.1	54 7.4
23	241 26 23.5	0.18	9.9942689	14 43.8	14 44.1	54 3.4
24	242 27 8.0	N.0.05	9.9941918	14 44.9	14 46.1	54 7.3
25	243 27 54.1	S.0.08	9.9941157	14 47.8	14 49.8	54 18.0
26	244 28 41.5	0.18	9.9940409	14 52.2	14 54.9	54 34.2
27	245 29 30.3	0.28	9.9939674	14 57.8	15 0.9	54 54.6
28	246 30 20.3	0.34	9.9938951	15 4.2	15 7.7	55 18.1
29	247 31 11.4	0.38	9.9938241	15 11.3	15 15.1	55 44.2
30	248 32 3.6	0.38	9.9937545	15 18.9	15 23.0	56 12.2
31	249 32 56.7	S.0.36	9.9936862	15 27.1	15 31.3	56 42.1

MEAN TIME.

Day of the Month.		THE MOON'S														
		Longitude.				Latitude.				Age.	Meridian					
		Noon.		Midnight.		Noon.		Midnight.		Noon.	Passage.					
	°	'	"	°	'	"	°	'	"	d	h	m				
n.	1	259	4	3'3	265	16	43'0	S. 4	42	3'0	S. 4	55	19'4	3'6	2	32'3
n.	2	271	32	32'7	277	51	49'3	5	5	11'4	5	11	27'1	4'6	3	26'9
n.	3	284	14	49'9	290	41	52'3	5	13	55'8	5	12	29'5	5'6	4	22'4
es.	4	297	13	14'3	303	49	13'1	5	7	1'5	4	57	27'4	6'6	5	17'5
ed.	5	310	30	5'0	317	16	4'0	4	43	45'8	4	25	57'9	7'6	6	10'8
ur.	6	324	7	21'6	331	4	4'8	4	4	9'4	3	38	29'8	8'6	7	2'2
id.	7	338	6	16'3	345	13	52'5	3	9	13'2	2	36	38'9	9'6	7	52'0
t.	8	352	26	41'8	359	44	25'5	2	1	12'8	1	23	24'9	10'6	8	41'3
n.	9	7	6	35'0	14	32	33'1	S. 0	43	52'2	S. 0	3	16'3	11'6	9	31'2
on.	10	22	1	32'7	29	32	38'7	N. 0	37	37'3	N. 1	18	1'3	12'6	10	23'2
es.	11	37	4	48'8	44	36	55'8	1	57	6'4	2	34	6'0	13'6	11	18'6
ed.	12	52	7	49'3	59	36	19'9	3	8	16'1	3	38	59'0	14'6	12	17'8
ur.	13	67	1	20'6	74	21	51'1	4	5	43'2	4	28	4'9	15'6	13	20'1
id.	14	81	36	58'7	88	46	1'2	4	45	49'1	4	58	48'2	16'6	14	23'4
t.	15	95	48	26'9	102	43	55'5	5	7	1'7	5	10	35'6	17'6	15	24'8
n.	16	109	32	18'0	116	13	35'8	5	9	40'5	5	4	30'9	18'6	16	21'9
on.	17	122	47	59'3	129	15	47'1	4	55	24'1	4	42	39'0	19'6	17	13'8
es.	18	135	37	24'2	141	53	21'1	4	26	35'1	4	7	32'0	20'6	18	0'8
ed.	19	148	4	12'2	154	10	34'7	3	45	50'1	3	21	48'4	21'6	18	43'9
ur.	20	160	13	5'6	166	12	26'2	2	55	45'9	2	28	1'1	22'6	19	24'3
id.	21	172	9	15'5	178	4	11'9	1	58	51'6	1	28	35'5	23'6	20	3'3
t.	22	183	57	53'0	189	50	55'0	N. 0	57	30'0	N. 0	25	52'8	24'6	20	42'0
n.	23	195	43	51'4	201	37	13'6	S. 0	5	58'6	S. 0	37	46'0	25'6	21	21'7
on.	24	207	31	30'0	213	27	6'5	1	9	11'5	1	39	56'4	26'6	22	3'3
es.	25	219	24	25'3	225	23	46'0	2	9	42'1	2	38	9'0	27'6	22	47'9
ed.	26	231	25	24'5	237	29	33'9	3	4	58'0	3	29	50'1	28'6	23	36'0
ur.	27	243	36	23'9	249	46	1'9	3	52	26'2	4	12	28'5	29'6		♄
id.	28	255	58	32'5	262	13	58'8	4	29	39'4	4	43	43'4	0'8		0
t.	29	268	32	22'0	274	53	42'8	4	54	25'6	5	1	35'0	1'8		
n.	30	281	18	1'5	287	45	18'3	5	5	0'7	5	4	34'7	2'8		
on.	31	294	15	34'3	300	48	51'4	S. 5	0	13'0	S. 4	51	53'3	3		

MEAN TIME.						
THE MOON'S RIGHT ASCENSION AND DECLINATION						
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
<i>SATURDAY 1.</i>				<i>MONDAY 3.</i>		
0	h m s 17 10 41.84	° ' " S.27 41 39.7	" 37.96	0	h m s 19 4 23.96	° ' " S.27 53 5
1	17 13 0.24	27 45 27.4	36.54	1	19 6 47.67	27 50 2
2	17 15 18.88	27 49 6.7	35.12	2	19 9 11.35	27 46 3
3	17 17 37.75	27 52 37.4	33.68	3	19 11 34.98	27 42 4
4	17 19 56.86	27 55 59.5	32.24	4	19 13 58.57	27 38 4
5	17 22 16.19	27 59 12.9	30.80	5	19 16 22.11	27 34 2
6	17 24 35.74	28 2 17.7	29.34	6	19 18 45.59	27 30
7	17 26 55.52	28 5 13.8	27.88	7	19 21 9.00	27 25 3
8	17 29 15.50	28 8 1.1	26.42	8	19 23 32.35	27 20 5
9	17 31 35.69	28 10 39.6	24.94	9	19 25 55.62	27 16
10	17 33 56.08	28 13 9.2	23.46	10	19 28 18.82	27 11
11	17 36 16.67	28 15 30.0	21.97	11	19 30 41.93	27 5 5
12	17 38 37.45	28 17 41.8	20.48	12	19 33 4.95	27 0 3
13	17 40 58.42	28 19 44.7	18.98	13	19 35 27.88	26 55 1
14	17 43 19.56	28 21 38.6	17.48	14	19 37 50.71	26 49 3
15	17 45 40.89	28 23 23.4	15.96	15	19 40 13.43	26 43 4
16	17 48 2.38	28 24 59.2	14.45	16	19 42 36.05	26 37 5
17	17 50 24.03	28 26 25.9	12.93	17	19 44 58.56	26 31 4
18	17 52 45.85	28 27 43.4	11.40	18	19 47 20.95	26 25 3
19	17 55 7.81	28 28 51.8	9.87	19	19 49 43.21	26 19 1
20	17 57 29.93	28 29 51.1	8.33	20	19 52 5.36	26 12 3
21	17 59 52.18	28 30 41.1	6.79	21	19 54 27.37	26 5 5
22	18 2 14.57	28 31 21.8	5.25	22	19 56 49.26	25 59
23	18 4 37.09	S.28 31 53.3	3.70	23	19 59 11.01	S.25 52
<i>SUNDAY 2.</i>				<i>TUESDAY 4.</i>		
0	h m s 18 6 59.73	° ' " S.28 32 15.5	" 2.15	0	h m s 20 1 32.61	° ' " S.25 44 5
1	18 9 22.49	28 32 28.4	0.59	1	20 3 54.07	25 37 3
2	18 11 45.36	28 32 31.9	0.97	2	20 6 15.38	25 30 1
3	18 14 8.33	28 32 26.1	2.54	3	20 8 36.55	25 22 3
4	18 16 31.40	28 32 10.9	4.10	4	20 10 57.56	25 14 5
5	18 18 54.57	28 31 46.3	5.67	5	20 13 18.41	25 7
6	18 21 17.82	28 31 12.2	7.24	6	20 15 39.10	24 58 5
7	18 23 41.15	28 30 28.8	8.82	7	20 17 59.64	24 50 4
8	18 26 4.55	28 29 35.9	10.40	8	20 20 20.00	24 42 2
9	18 28 28.02	28 28 33.5	11.97	9	20 22 40.20	24 33 5
10	18 30 51.56	28 27 21.6	13.56	10	20 25 0.23	24 25 2
11	18 33 15.14	28 26 0.3	15.14	11	20 27 20.09	24 16 3
12	18 35 38.78	28 24 29.5	16.72	12	20 29 39.77	24 7 4
13	18 38 2.46	28 22 49.2	18.31	13	20 31 59.27	23 58 4
14	18 40 26.17	28 20 59.3	19.89	14	20 34 18.60	23 49 2
15	18 42 49.92	28 18 59.9	21.48	15	20 36 37.74	23 40 1
16	18 45 13.68	28 16 51.1	23.07	16	20 38 56.71	23 30 4
17	18 47 37.47	28 14 32.7	24.66	17	20 41 15.49	23 21
18	18 50 1.26	28 12 4.7	26.24	18	20 43 34.08	23 11 2
19	18 52 25.07	28 9 27.3	27.83	19	20 45 52.49	23 1 2
20	18 54 48.87	28 6 40.3	29.42	20	20 48 10.71	22 51 2
21	18 57 12.66	28 3 43.8	31.01	21	20 50 28.74	22 41 2
22	18 59 36.45	28 0 37.7	32.59	22	20 52 46.58	22 31
23	19 2 0.21	27 57 22.2	34.18	23	20 55 4.23	22 20 3
24	19 4 23.96	S.27 53 57.1		24	20 57 21.69	S.22 10

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>WEDNESDAY 5.</i>				<i>FRIDAY 7.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	20 57 21.69	S. 22 10 5.6	106.80	0	22 43 51.23	S. 11 27 40.4	157.57
1	20 59 38.96	21 59 24.8	108.11	1	22 46 0.87	11 11 55.0	158.33
2	21 1 56.04	21 48 36.1	109.41	2	22 48 10.43	10 56 5.0	159.08
3	21 4 12.92	21 37 39.7	110.70	3	22 50 19.90	10 40 10.6	159.81
4	21 6 29.61	21 26 35.5	111.98	4	22 52 29.29	10 24 11.7	160.53
5	21 8 46.11	21 15 23.6	113.25	5	22 54 38.61	10 8 8.5	161.24
6	21 11 2.41	21 4 4.0	114.52	6	22 56 47.85	9 52 1.1	161.93
7	21 13 18.53	20 52 36.9	115.77	7	22 58 57.03	9 35 49.5	162.61
8	21 15 34.45	20 41 2.3	117.01	8	23 1 6.15	9 19 33.9	163.27
9	21 17 50.18	20 29 20.3	118.24	9	23 3 15.21	9 3 14.2	163.92
10	21 20 5.72	20 17 30.8	119.47	10	23 5 24.22	8 46 50.7	164.56
11	21 22 21.07	20 5 34.0	120.68	11	23 7 33.18	8 30 23.4	165.18
12	21 24 36.23	19 53 30.0	121.88	12	23 9 42.09	8 13 52.3	165.78
13	21 26 51.20	19 41 18.7	123.07	13	23 11 50.97	7 57 17.6	166.37
14	21 29 5.99	19 29 0.3	124.25	14	23 13 59.81	7 40 39.4	166.95
15	21 31 20.58	19 16 34.8	125.42	15	23 16 8.62	7 23 57.7	167.51
16	21 33 35.00	19 4 2.3	126.58	16	23 18 17.41	7 7 12.6	168.06
17	21 35 49.23	18 51 22.9	127.73	17	23 20 26.17	6 50 24.2	168.60
18	21 38 3.28	18 38 36.5	128.86	18	23 22 34.93	6 33 32.6	169.11
19	21 40 17.14	18 25 43.3	129.99	19	23 24 43.67	6 16 38.0	169.62
20	21 42 30.83	18 12 43.4	131.11	20	23 26 52.41	5 59 40.3	170.10
21	21 44 44.34	17 59 36.8	132.21	21	23 29 1.15	5 42 39.6	170.58
22	21 46 57.68	17 46 23.5	133.31	22	23 31 9.89	5 25 36.2	171.03
23	21 49 10.84	S. 17 33 3.6	134.39	23	23 33 18.65	S. 5 8 30.0	171.47
<i>THURSDAY 6.</i>				<i>SATURDAY 8.</i>			
0	21 51 23.83	S. 17 19 37.3	135.46	0	23 35 27.42	S. 4 51 21.1	171.90
1	21 53 36.65	17 6 4.5	136.52	1	23 37 36.21	4 34 9.7	172.31
2	21 55 49.31	16 52 25.4	137.57	2	23 39 45.02	4 16 55.8	172.71
3	21 58 1.80	16 38 40.0	138.60	3	23 41 53.87	3 59 39.5	173.09
4	22 0 14.13	16 24 48.4	139.63	4	23 44 2.75	3 42 21.0	173.45
5	22 2 26.30	16 10 50.6	140.64	5	23 46 11.67	3 25 0.3	173.79
6	22 4 38.31	15 56 46.8	141.65	6	23 48 20.64	3 7 37.6	174.12
7	22 6 50.17	15 42 36.9	142.64	7	23 50 29.66	2 50 12.9	174.43
8	22 9 1.88	15 28 21.1	143.61	8	23 52 38.74	2 32 46.3	174.73
9	22 11 13.44	15 13 59.4	144.58	9	23 54 47.88	2 15 17.9	175.01
10	22 13 24.85	14 59 31.9	145.53	10	23 56 57.08	1 57 47.8	175.27
11	22 15 36.12	14 44 58.7	146.47	11	23 59 6.36	1 40 16.2	175.51
12	22 17 47.25	14 30 19.9	147.40	12	0 1 15.71	1 22 43.1	175.74
13	22 19 58.25	14 15 35.5	148.32	13	0 3 25.15	1 5 8.7	175.95
14	22 22 9.11	14 0 45.6	149.23	14	0 5 34.68	0 47 33.0	176.14
15	22 24 19.85	13 45 50.2	150.12	15	0 7 44.30	0 29 56.1	176.32
16	22 26 30.46	13 30 49.5	151.00	16	0 9 54.02	S. 0 12 18.2	176.48
17	22 28 40.94	13 15 43.5	151.86	17	0 12 3.84	N. 0 5 20.7	176.62
18	22 30 51.31	13 0 32.3	152.72	18	0 14 13.78	0 23 0.4	176.74
19	22 33 1.56	12 45 16.0	153.56	19	0 16 23.83	0 40 40.8	176.84
20	22 35 11.70	12 29 54.7	154.39	20	0 18 34.00	0 58 21.8	176.93
21	22 37 21.74	12 14 28.4	155.20	21	0 20 44.30	1 16 3.4	177.00
22	22 39 31.67	11 58 57.2	156.00	22	0 22 54.73	1 33 45.4	177.05
23	22 41 41.50	11 43 21.2	156.79	23	0 25 5.30	1 51 27.6	177.08
24	22 43 51.23	S. 11 27 40.4		24	0 27 16.01	N. 2 9 10.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
<i>SUNDAY 9.</i>				<i>TUESDAY 11.</i>		
0	h m s 0 27 16.01	N. 2 9 10.1	177.09	0	h m s 2 16 16.65	N. 15 43 55.8
1	0 29 26.87	2 26 52.7	177.09	1	2 18 40.25	15 59 18.8
2	0 31 37.88	2 44 35.2	177.06	2	2 21 4.21	16 14 35.8
3	0 33 49.05	3 2 17.5	177.02	3	2 23 28.53	16 29 46.5
4	0 36 0.38	3 19 59.6	176.95	4	2 25 53.20	16 44 50.9
5	0 38 11.89	3 37 41.4	176.87	5	2 28 18.24	16 59 48.9
6	0 40 23.57	3 55 22.6	176.77	6	2 30 43.63	17 14 40.2
7	0 42 35.43	4 13 3.2	176.65	7	2 33 9.38	17 29 24.8
8	0 44 47.47	4 30 43.1	176.51	8	2 35 35.50	17 44 2.6
9	0 46 59.71	4 48 22.2	176.35	9	2 38 1.99	17 58 33.4
10	0 49 12.14	5 6 0.3	176.17	10	2 40 28.83	18 12 57.1
11	0 51 24.77	5 23 37.3	175.97	11	2 42 56.04	18 27 13.5
12	0 53 37.61	5 41 13.1	175.75	12	2 45 23.61	18 41 22.5
13	0 55 50.66	5 58 47.6	175.51	13	2 47 51.55	18 55 24.0
14	0 58 3.92	6 16 20.7	175.25	14	2 50 19.86	19 9 17.9
15	1 0 17.41	6 33 52.2	174.97	15	2 52 48.53	19 23 4.1
16	1 2 31.12	6 51 22.0	174.67	16	2 55 17.56	19 36 42.3
17	1 4 45.07	7 8 50.0	174.35	17	2 57 46.96	19 50 12.6
18	1 6 59.25	7 26 16.1	174.01	18	3 0 16.72	20 3 34.7
19	1 9 13.67	7 43 40.2	173.65	19	3 2 46.84	20 16 48.6
20	1 11 28.34	8 1 2.0	173.27	20	3 5 17.32	20 29 54.0
21	1 13 43.26	8 18 21.6	172.86	21	3 7 48.16	20 42 51.0
22	1 15 58.43	8 35 38.8	172.44	22	3 10 19.36	20 55 39.4
23	1 18 13.87	N. 8 52 53.5	171.99	23	3 12 50.91	N. 21 8 19.1
<i>MONDAY 10.</i>				<i>WEDNESDAY 12.</i>		
0	1 20 29.57	N. 9 10 5.4	171.53	0	3 15 22.81	N. 21 20 49.9
1	1 22 45.54	9 27 14.6	171.05	1	3 17 55.07	21 33 11.8
2	1 25 1.78	9 44 20.9	170.54	2	3 20 27.67	21 45 24.5
3	1 27 18.30	10 1 24.1	170.01	3	3 23 0.62	21 57 28.1
4	1 29 35.11	10 18 24.1	169.46	4	3 25 33.91	22 9 22.4
5	1 31 52.20	10 35 20.9	168.88	5	3 28 7.53	22 21 7.2
6	1 34 9.59	10 52 14.2	168.29	6	3 30 41.50	22 32 42.5
7	1 36 27.26	11 9 3.9	167.67	7	3 33 15.79	22 44 8.2
8	1 38 45.24	11 25 49.9	167.03	8	3 35 50.41	22 55 24.2
9	1 41 3.53	11 42 32.1	166.37	9	3 38 25.35	23 6 30.3
10	1 43 22.12	11 59 10.3	165.69	10	3 41 0.60	23 17 26.5
11	1 45 41.02	12 15 44.5	164.99	11	3 43 36.17	23 28 12.6
12	1 48 0.24	12 32 14.4	164.26	12	3 46 12.05	23 38 48.6
13	1 50 19.78	12 48 40.0	163.51	13	3 48 48.23	23 49 14.4
14	1 52 39.64	13 5 1.0	162.74	14	3 51 24.71	23 59 29.8
15	1 54 59.82	13 21 17.4	161.95	15	3 54 1.47	24 9 34.7
16	1 57 20.34	13 37 29.1	161.13	16	3 56 38.52	24 19 29.2
17	1 59 41.19	13 53 35.9	160.30	17	3 59 15.85	24 29 13.0
18	2 2 2.37	14 9 37.7	159.44	18	4 1 53.45	24 38 46.2
19	2 4 23.89	14 25 34.4	158.56	19	4 4 31.32	24 48 8.5
20	2 6 45.75	14 41 25.7	157.66	20	4 7 9.44	24 57 20.0
21	2 9 7.96	14 57 11.7	156.74	21	4 9 47.82	25 6 20.6
22	2 11 30.51	15 12 52.1	155.79	22	4 12 26.44	25 15 10.1
23	2 13 53.40	15 28 26.9	154.82	23	4 15 5.30	25 23 48.5
24	2 16 16.65	N. 15 43 55.8		24	4 17 44.39	N. 25 32 15.8

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>THURSDAY 13.</i>				<i>SATURDAY 15.</i>		
h m s	° ' "	"		h m s	° ' "	"
4 17 44.39	N.25 32 15.8	82.67	0	6 26 19.61	N.28 26 41.6	11.99
4 20 23.70	25 40 31.8	80.78	1	6 28 57.61	28 25 29.7	13.87
4 23 3.23	25 48 36.5	78.89	2	6 31 35.33	28 24 6.4	15.74
4 25 42.96	25 56 29.8	76.98	3	6 34 12.75	28 22 32.0	17.60
4 28 22.89	26 4 11.7	75.06	4	6 36 49.86	28 20 46.4	19.45
4 31 3.01	26 11 42.1	73.14	5	6 39 26.65	28 18 49.7	21.28
4 33 43.30	26 19 0.9	71.20	6	6 42 3.13	28 16 42.0	23.10
4 36 23.76	26 26 8.1	69.26	7	6 44 39.27	28 14 23.4	24.92
4 39 4.38	26 33 3.7	67.31	8	6 47 15.07	28 11 53.9	26.71
4 41 45.15	26 39 47.5	65.35	9	6 49 50.52	28 9 13.6	28.50
4 44 26.07	26 46 19.6	63.38	10	6 52 25.61	28 6 22.6	30.27
4 47 7.11	26 52 39.9	61.41	11	6 55 0.34	28 3 21.0	32.03
4 49 48.28	26 58 48.4	59.43	12	6 57 34.69	28 0 8.8	33.78
4 52 29.56	27 4 45.0	57.44	13	7 0 8.66	27 56 46.1	35.51
4 55 10.94	27 10 29.6	55.45	14	7 2 42.25	27 53 13.1	37.23
4 57 52.40	27 16 2.4	53.46	15	7 5 15.44	27 49 29.7	38.93
5 0 33.95	27 21 23.1	51.46	16	7 7 48.24	27 45 36.1	40.62
5 3 15.56	27 26 31.9	49.45	17	7 10 20.62	27 41 32.4	42.29
5 5 57.24	27 31 28.6	47.45	18	7 12 52.60	27 37 18.6	43.95
5 8 38.96	27 36 13.3	45.44	19	7 15 24.15	27 32 54.9	45.60
5 11 20.72	27 40 45.9	43.42	20	7 17 55.28	27 28 21.3	47.23
5 14 2.50	27 45 6.4	41.41	21	7 20 25.98	27 23 38.0	48.84
5 16 44.29	27 49 14.9	39.39	22	7 22 56.24	27 18 44.9	50.44
5 19 26.09	N.27 53 11.2	37.38	23	7 25 26.07	N.27 13 42.3	52.03
<i>FRIDAY 14.</i>				<i>SUNDAY 16.</i>		
h m s	° ' "	"		h m s	° ' "	"
5 22 7.89	N.27 56 55.5	35.35	0	7 27 55.44	N.27 8 30.1	53.59
5 24 49.67	28 0 27.6	33.34	1	7 30 24.36	27 3 8.5	55.14
5 27 31.41	28 3 47.6	31.32	2	7 32 52.83	26 57 37.7	56.68
5 30 13.12	28 6 55.6	29.30	3	7 35 20.84	26 51 57.6	58.20
5 32 54.77	28 9 51.4	27.29	4	7 37 48.39	26 46 8.4	59.70
5 35 36.36	28 12 35.1	25.28	5	7 40 15.47	26 40 10.2	61.19
5 38 17.87	28 15 6.8	23.27	6	7 42 42.08	26 34 3.1	62.66
5 40 59.30	28 17 26.4	21.26	7	7 45 8.21	26 27 47.2	64.11
5 43 40.63	28 19 34.0	19.26	8	7 47 33.87	26 21 22.5	65.55
5 46 21.85	28 21 29.5	17.26	9	7 49 59.04	26 14 49.2	66.98
5 49 2.95	28 23 13.0	15.26	10	7 52 23.74	26 8 7.3	68.38
5 51 43.92	28 24 44.6	13.27	11	7 54 47.95	26 1 17.0	69.77
5 54 24.75	28 26 4.2	11.28	12	7 57 11.67	25 54 18.4	71.14
5 57 5.42	28 27 11.9	9.30	13	7 59 34.90	25 47 11.5	72.50
5 59 45.93	28 28 7.7	7.33	14	8 1 57.65	25 39 56.6	
6 2 26.27	28 28 51.6	5.36	15	8 4 19.90	25 32 33.7	
6 5 6.41	28 29 23.8	3.40	16	8 6 41.65	25 25 2.2	
6 7 46.36	28 29 44.2	1.45	17	8 9 2.92	25 17 2.2	
6 10 26.10	28 29 52.9	0.50	18	8 11 23.68	25 9 2.2	
6 13 5.63	28 29 49.9	2.44	19	8 13 43.95	25 1 2.2	
6 15 44.92	28 29 35.3	4.37	20	8 16 3.72	24 53 2.2	
6 18 23.97	28 29 9.1	6.29	21	8 18 22.99	24 45 2.2	
6 21 2.78	28 28 31.4	8.20	22	8 20 41.77	24 37 2.2	
6 23 41.33	28 27 42.2	10.10	23	8 23 0.05	24 29 2.2	
6 26 19.61	N.28 26 41.6		24	8 25 17.82	N.28 26 41.6	

MEAN TIME.						
THE MOON'S RIGHT ASCENSION AND DECLINATION.						
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.
<i>MONDAY 17.</i>				<i>WEDNESDAY 19.</i>		
0	h m s	° ' "	"	0	h m s	° ' "
1	8 25 17.82	N.24 20 21.0	86.33	10	6 22.96	N.15 41
2	8 27 35.10	24 11 43.0	87.49	1	10 8 19.22	15 28
3	8 29 51.89	24 2 58.1	88.63	2	10 10 15.13	15 15
4	8 34 8.17	23 54 6.4	89.76	3	10 12 10.71	15 3
5	8 34 23.96	23 45 7.8	90.87	4	10 14 5.95	14 50
6	8 36 39.26	23 36 2.6	91.96	5	10 16 0.86	14 37
7	8 38 54.06	23 26 50.8	93.04	6	10 17 55.44	14 24
8	8 41 8.38	23 17 32.6	94.11	7	10 19 49.71	14 11
9	8 43 22.20	23 8 7.9	95.16	8	10 21 43.66	13 59
10	8 45 35.53	22 58 37.0	96.19	9	10 23 37.30	13 46
11	8 47 48.37	22 48 59.8	97.21	10	10 25 30.64	13 33
12	8 50 0.72	22 39 16.6	98.21	11	10 27 23.67	13 20
13	8 52 12.59	22 29 27.3	99.20	12	10 29 16.41	13 7
14	8 54 23.98	22 19 32.1	100.17	13	10 31 8.86	12 53
15	8 56 34.89	22 9 31.1	101.13	14	10 33 1.01	12 40
16	8 58 45.32	21 59 24.3	102.07	15	10 34 52.89	12 27
17	9 0 55.28	21 49 11.9	103.00	16	10 36 44.49	12 14
18	9 3 4.77	21 38 53.9	103.91	17	10 38 35.82	12 1
19	9 5 13.79	21 28 30.4	104.81	18	10 40 26.88	11 47
20	9 7 22.34	21 18 1.5	105.70	19	10 42 17.68	11 34
21	9 9 30.42	21 7 27.3	106.57	20	10 44 8.23	11 21
22	9 11 38.05	20 56 47.9	107.43	21	10 45 58.52	11 7
23	9 13 45.22	20 46 3.3	108.27	22	10 47 48.57	10 54
24	9 15 51.93	N.20 35 13.7	109.10	23	10 49 38.37	N.10 40
<i>TUESDAY 18.</i>				<i>THURSDAY 20.</i>		
0	9 17 58.19	N.20 24 19.1	109.92	0	10 51 27.95	N.10 27
1	9 20 4.00	20 13 19.6	110.72	1	10 53 17.29	10 13
2	9 22 9.37	20 2 15.3	111.51	2	10 55 6.40	10 0
3	9 24 14.30	19 51 6.3	112.28	3	10 56 55.30	9 46
4	9 26 18.79	19 39 52.6	113.04	4	10 58 43.97	9 32
5	9 28 22.85	19 28 34.3	113.79	5	11 0 32.44	9 19
6	9 30 26.48	19 17 11.6	114.53	6	11 2 20.69	9 5
7	9 32 29.68	19 5 44.4	115.25	7	11 4 8.75	8 51
8	9 34 32.46	18 54 13.0	115.96	8	11 5 56.60	8 38
9	9 36 34.82	18 42 37.2	116.65	9	11 7 44.27	8 24
10	9 38 36.77	18 30 57.3	117.34	10	11 9 31.74	8 10
11	9 40 38.31	18 19 13.3	118.01	11	11 11 19.04	7 56
12	9 42 39.44	18 7 25.2	118.67	12	11 13 6.15	7 43
13	9 44 40.17	17 55 33.2	119.31	13	11 14 53.09	7 29
14	9 46 40.51	17 43 37.3	119.95	14	11 16 39.86	7 15
15	9 48 40.45	17 31 37.6	120.57	15	11 18 26.48	7 1
16	9 50 40.00	17 19 34.2	121.19	16	11 20 12.93	6 47
17	9 52 39.17	17 7 27.1	121.79	17	11 21 59.23	6 33
18	9 54 37.96	16 55 16.3	122.38	18	11 23 45.38	6 19
19	9 56 36.37	16 43 2.1	122.95	19	11 25 31.38	6 5
20	9 58 34.41	16 30 44.4	123.52	20	11 27 17.25	5 52
21	10 0 32.09	16 18 23.2	124.08	21	11 29 2.98	5 38
22	10 2 29.40	16 5 58.8	124.62	22	11 30 48.59	5 24
23	10 4 26.36	15 53 31.0	125.16	23	11 32 34.07	5 10
24	10 6 22.96	N.15 41 0.1		24	11 34 19.43	N. 4 56

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10m.
<i>FRIDAY 21.</i>				<i>SUNDAY 23.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	11 34 19.43	N. 4 56 5.5	140.13	0	12 57 47.74	S. 6 17 18.0	137.83
1	11 36 4.67	4 42 4.7	140.24	1	12 59 32.92	6 31 5.0	137.62
2	11 37 49.81	4 28 3.3	140.34	2	13 1 18.21	6 44 50.7	137.40
3	11 39 34.84	4 14 1.3	140.43	3	13 3 3.62	6 58 35.1	137.17
4	11 41 19.77	3 59 58.7	140.52	4	13 4 49.14	7 12 18.1	136.93
5	11 43 4.60	3 45 55.6	140.61	5	13 6 34.78	7 25 59.7	136.69
6	11 44 49.35	3 31 51.9	140.68	6	13 8 20.54	7 39 39.8	136.44
7	11 46 34.00	3 17 47.8	140.75	7	13 10 6.44	7 53 18.4	136.18
8	11 48 18.58	3 3 43.3	140.81	8	13 11 52.47	8 6 55.5	135.91
9	11 50 3.07	2 49 38.5	140.87	9	13 13 38.63	8 20 30.9	135.64
10	11 51 47.50	2 35 33.2	140.92	10	13 15 24.94	8 34 4.8	135.36
11	11 53 31.86	2 21 27.7	140.96	11	13 17 11.39	8 47 36.9	135.07
12	11 55 16.15	2 7 22.0	141.00	12	13 18 58.00	9 1 7.3	134.77
13	11 57 0.39	1 53 16.0	141.02	13	13 20 44.76	9 14 35.9	134.47
14	11 58 44.57	1 39 9.9	141.05	14	13 22 31.68	9 28 2.7	134.16
15	12 0 28.71	1 25 3.6	141.06	15	13 24 18.75	9 41 27.7	133.84
16	12 2 12.80	1 10 57.2	141.07	16	13 26 6.00	9 54 50.7	133.51
17	12 3 56.85	0 56 50.8	141.07	17	13 27 53.42	10 8 11.8	133.17
18	12 5 40.86	0 42 44.3	141.07	18	13 29 41.01	10 21 30.8	132.83
19	12 7 24.85	0 28 37.9	141.06	19	13 31 28.78	10 34 47.8	132.48
20	12 9 8.81	0 14 31.6	141.04	20	13 33 16.73	10 48 2.7	132.12
21	12 10 52.75	N. 0 0 25.3	141.02	21	13 35 4.87	11 1 15.4	131.75
22	12 12 36.67	S. 0 13 40.8	140.99	22	13 36 53.20	11 14 25.9	131.38
23	12 14 20.58	S. 0 27 46.7	140.95	23	13 38 41.73	S. 11 27 34.2	130.99
<i>SATURDAY 22.</i>				<i>MONDAY 24.</i>			
0	12 16 4.48	S. 0 41 52.4	140.90	0	13 40 30.45	S. 11 40 40.1	130.60
1	12 17 48.38	0 55 57.8	140.85	1	13 42 19.38	11 53 43.7	130.20
2	12 19 32.29	1 10 3.0	140.80	2	13 44 8.51	12 6 44.9	129.79
3	12 21 16.20	1 24 7.7	140.73	3	13 45 57.85	12 19 43.6	129.37
4	12 23 0.12	1 38 12.1	140.66	4	13 47 47.41	12 32 39.8	128.94
5	12 24 44.06	1 52 16.1	140.59	5	13 49 37.19	12 45 33.5	128.51
6	12 26 28.02	2 6 19.6	140.50	6	13 51 27.18	12 58 24.5	128.07
7	12 28 12.00	2 20 22.6	140.41	7	13 53 17.40	13 11 12.9	127.61
8	12 29 56.01	2 34 25.1	140.32	8	13 55 7.85	13 23 58.6	127.15
9	12 31 40.06	2 48 27.0	140.21	9	13 56 58.54	13 36 41.5	126.68
10	12 33 24.14	3 2 28.3	140.10	10	13 58 49.46	13 49 21.6	126.20
11	12 35 8.26	3 16 28.9	139.98	11	14 0 40.62	14 1 58.8	125.71
12	12 36 52.43	3 30 28.8	139.86	12	14 2 32.03	14 14 33.1	125.22
13	12 38 36.65	3 44 28.0	139.73	13	14 4 23.68	14 27 4.4	124.71
14	12 40 20.93	3 58 26.4	139.59	14	14 6 15.58	14 39 32.7	124.20
15	12 42 5.27	4 12 23.9	139.45	15	14 8 7.73	14 51 57.8	123.67
16	12 43 49.67	4 26 20.6	139.30	16	14 10 0.14	15 4 19.9	123.14
17	12 45 34.14	4 40 16.4	139.14	17	14 11 52.81	15 16 38	
18	12 47 18.69	4 54 11.3	138.97	18	14 13 45.75	15 28	
19	12 49 3.31	5 8 5.1	138.80	19	14 15 38.95	15 41	
20	12 50 48.01	5 21 57.9	138.62	20	14 17 32.43	15 53	
21	12 52 32.81	5 35 49.7	138.44	21	14 19 26.17	16 5	
22	12 54 17.69	5 49 40.3	138.24	22	14 21 20.20	16	
23	12 56 2.66	6 3 29.7	138.04	23	14 23 14.51	16	
24	12 57 47.74	S. 6 17 18.0		24	14 25 9.09	S. 16	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	
<i>TUESDAY 25.</i>				<i>THURSDAY 27.</i>			
	h m s	° ' "	"		h m s	° ' "	
0	14 25 9.09	S. 16 41 15.8	118.51	0	16 3 7.29	S. 24 41 39.9	
1	14 27 3.97	16 53 6.9	117.89	1	16 5 18.14	24 49 19.1	
2	14 28 59.13	17 4 54.2	117.26	2	16 7 29.33	24 56 51.4	
3	14 30 54.58	17 16 37.8	116.62	3	16 9 40.86	25 4 16.7	
4	14 32 50.34	17 28 17.5	115.97	4	16 11 52.73	25 11 35.0	
5	14 34 46.39	17 39 53.3	115.30	5	16 14 4.94	25 18 46.1	
6	14 36 42.74	17 51 25.1	114.63	6	16 16 17.49	25 25 50.1	
7	14 38 39.39	18 2 52.9	113.95	7	16 18 30.36	25 32 46.9	
8	14 40 36.35	18 14 16.6	113.26	8	16 20 43.56	25 39 36.4	
9	14 42 33.62	18 25 36.2	112.55	9	16 22 57.10	25 46 18.6	
10	14 44 31.20	18 36 51.5	111.84	10	16 25 10.97	25 52 53.3	
11	14 46 29.09	18 48 2.5	111.11	11	16 27 25.16	25 59 20.5	
12	14 48 27.31	18 59 9.2	110.38	12	16 29 39.67	26 5 40.1	
13	14 50 25.84	19 10 11.5	109.64	13	16 31 54.50	26 11 52.1	
14	14 52 24.69	19 21 9.3	108.88	14	16 34 9.64	26 17 56.5	
15	14 54 23.86	19 32 2.6	108.11	15	16 36 25.10	26 23 53.0	
16	14 56 23.36	19 42 51.2	107.33	16	16 38 40.86	26 29 41.8	
17	14 58 23.19	19 53 35.2	106.55	17	16 40 56.94	26 35 22.7	
18	15 0 23.34	20 4 14.5	105.75	18	16 43 13.31	26 40 55.7	
19	15 2 23.83	20 14 49.0	104.94	19	16 45 29.99	26 46 20.7	
20	15 4 24.65	20 25 18.6	104.11	20	16 47 46.95	26 51 37.7	
21	15 6 25.80	20 35 43.3	103.28	21	16 50 4.21	26 56 46.5	
22	15 8 27.29	20 46 3.0	102.44	22	16 52 21.76	27 1 47.2	
23	15 10 29.12	S. 20 56 17.6	101.58	23	16 54 39.59	S. 27 6 39.7	
<i>WEDNESDAY 26.</i>				<i>FRIDAY 28.</i>			
0	15 12 31.29	S. 21 6 27.1	100.72	0	16 56 57.70	S. 27 11 23.9	
1	15 14 33.80	21 16 31.4	99.84	1	16 59 16.09	27 15 59.8	
2	15 16 36.65	21 26 30.5	98.95	2	17 1 34.75	27 20 27.3	
3	15 18 39.85	21 36 24.2	98.05	3	17 3 53.67	27 24 46.4	
4	15 20 43.38	21 46 12.5	97.14	4	17 6 12.86	27 28 57.0	
5	15 22 47.27	21 55 55.3	96.22	5	17 8 32.30	27 32 59.0	
6	15 24 51.50	22 5 32.7	95.29	6	17 10 52.00	27 36 52.4	
7	15 26 56.08	22 15 4.4	94.34	7	17 13 11.94	27 40 37.2	
8	15 29 1.00	22 24 30.4	93.38	8	17 15 32.12	27 44 13.3	
9	15 31 6.28	22 33 50.7	92.42	9	17 17 52.53	27 47 40.7	
10	15 33 11.90	22 43 5.2	91.44	10	17 20 13.18	27 50 59.3	
11	15 35 17.87	22 52 13.8	90.45	11	17 22 34.04	27 54 9.0	
12	15 37 24.19	23 1 16.5	89.44	12	17 24 55.13	27 57 9.9	
13	15 39 30.86	23 10 13.2	88.43	13	17 27 16.43	28 0 1.8	
14	15 41 37.88	23 19 3.7	87.40	14	17 29 37.95	28 2 44.7	
15	15 43 45.25	23 27 48.2	86.37	15	17 31 59.66	28 5 18.7	
16	15 45 52.97	23 36 26.4	85.32	16	17 34 21.57	28 7 43.6	
17	15 48 1.04	23 44 58.3	84.26	17	17 36 43.66	28 9 59.4	
18	15 50 9.46	23 53 23.8	83.19	18	17 39 5.94	28 12 6.1	
19	15 52 18.23	24 1 43.0	82.11	19	17 41 28.40	28 14 3.6	
20	15 54 27.35	24 9 55.6	81.01	20	17 43 51.03	28 15 51.9	
21	15 56 36.81	24 18 1.7	79.91	21	17 46 13.82	28 17 31.1	
22	15 58 46.63	24 26 1.1	78.79	22	17 48 36.77	28 19 0.9	
23	16 0 56.79	24 33 53.9	77.67	23	17 50 59.87	28 20 21.5	
24	16 3 7.29	S. 24 41 39.9		24	17 53 23.11	S. 28 21 32.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SATURDAY 29.</i>				<i>SUNDAY 30.</i>			
	h m s	° ' "	"		h m s	° ' "	"
0	17 53 23.11	S. 28 21 32.8	10.33	0	18 51 6.35	S. 28 2 37.2	27.85
1	17 55 46.49	28 22 34.8	8.76	1	18 53 30.95	27 59 50.1	29.45
2	17 58 10.01	28 23 27.3	7.20	2	18 55 55.51	27 56 53.4	31.04
3	18 0 33.64	28 24 10.5	5.63	3	18 58 20.03	27 53 47.2	32.63
4	18 2 57.40	28 24 44.3	4.06	4	19 0 44.50	27 50 31.4	34.23
5	18 5 21.26	28 25 8.7	2.48	5	19 3 8.91	27 47 6.0	35.81
6	18 7 45.23	28 25 23.5	0.90	6	19 5 33.26	27 43 31.1	37.40
7	18 10 9.29	28 25 28.9	0.68	7	19 7 57.54	27 39 46.7	38.98
8	18 12 33.45	28 25 24.8	2.27	8	19 10 21.75	27 35 52.8	40.56
9	18 14 57.69	28 25 11.2	3.86	9	19 12 45.87	27 31 49.4	42.14
10	18 17 22.00	28 24 48.0	5.45	10	19 15 9.91	27 27 36.6	43.71
11	18 19 46.38	28 24 15.3	7.04	11	19 17 33.85	27 23 14.3	45.28
12	18 22 10.82	28 23 33.1	8.64	12	19 19 57.69	27 18 42.6	46.85
13	18 24 35.32	28 22 41.2	10.24	13	19 22 21.43	27 14 1.5	48.41
14	18 26 59.86	28 21 39.8	11.84	14	19 24 45.05	27 9 11.1	49.96
15	18 29 24.45	28 20 28.8	13.44	15	19 27 8.56	27 4 11.3	51.52
16	18 31 49.06	28 19 8.1	15.04	16	19 29 31.95	26 59 2.2	53.06
17	18 34 13.71	28 17 37.9	16.64	17	19 31 55.21	26 53 43.8	54.60
18	18 36 38.37	28 15 58.1	18.24	18	19 34 18.33	26 48 16.2	56.14
19	18 39 3.04	28 14 8.6	19.84	19	19 36 41.32	26 42 39.4	57.67
20	18 41 27.72	28 12 9.5	21.45	20	19 39 4.16	26 36 53.3	59.20
21	18 43 52.40	28 10 0.9	23.05	21	19 41 26.85	26 30 58.1	60.72
22	18 46 17.07	28 7 42.6	24.65	22	19 43 49.40	26 24 53.8	62.23
23	18 48 41.72	28 5 14.7	26.25	23	19 46 11.78	26 18 40.4	63.74
24	18 51 6.35	S. 28 2 37.2		24	19 48 34.00	S. 26 12 18.0	

PHASES OF THE MOON.

	d h m
☾ First Quarter - - - - -	5 5 22.4
☉ Full Moon - - - - -	11 20 55.3
☾ Last Quarter - - - - -	18 22 33.8
● New Moon - - - - -	27 4 0.7

☾ Perigee - - - - -
☾ Apogee - - - - -

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .		
		°	'	"	°	'	"	°	'	"	°	'	"
1	SUN W.	40	0	55	41	25	57	42	51	9	44	16	31
	Fomalhaut E.	72	15	14	70	47	22	69	19	25	67	51	25
	α Pegasi E.	93	50	36	92	24	24	90	58	1	89	31	29
	Jupiter E.	100	53	50	99	20	38	97	47	16	96	13	44
2	SUN W.	51	26	15	52	52	47	54	19	33	55	46	31
	Venus W.	24	13	43	25	37	49	27	2	11	28	26	50
	Fomalhaut E.	60	30	36	59	2	21	57	34	5	56	5	49
	α Pegasi E.	82	16	23	80	48	55	79	21	19	77	53	34
3	Jupiter E.	88	23	20	86	48	40	85	13	48	83	38	43
	SUN W.	63	4	49	64	33	12	66	1	50	67	30	45
	Venus W.	35	34	12	37	0	30	38	27	5	39	53	56
	Fomalhaut E.	48	45	19	47	17	32	45	49	56	44	22	34
4	α Pegasi E.	70	33	6	69	4	42	67	36	14	66	7	42
	Jupiter E.	75	39	54	74	3	25	72	26	41	70	49	41
	SUN W.	74	59	24	76	29	59	78	0	53	79	32	5
	Venus W.	47	12	37	48	41	16	50	10	13	51	39	30
5	Mars W.	22	40	38	24	11	57	25	43	42	27	15	53
	α Pegasi E.	58	44	31	57	15	55	55	47	23	54	18	57
	Jupiter E.	62	40	38	61	1	58	59	23	0	57	43	43
	α Arietis E.	99	10	37	97	33	27	95	55	57	94	18	9
6	SUN W.	87	12	53	88	46	2	90	19	32	91	53	22
	Venus W.	59	10	48	60	42	5	62	13	42	63	45	41
	Mars W.	35	2	41	36	37	12	38	12	6	39	47	23
	α Pegasi E.	46	59	40	45	32	45	44	6	18	42	40	24
7	Jupiter E.	49	22	34	47	41	21	45	59	48	44	17	54
	α Arietis E.	86	4	21	84	24	36	82	44	32	81	4	7
	SUN W.	99	47	50	101	23	49	103	0	8	104	36	50
	Venus W.	71	30	56	73	5	4	74	39	35	76	14	28
8	Mars W.	47	49	29	49	27	2	51	4	59	52	43	18
	Jupiter E.	35	43	7	33	59	5	32	14	41	30	29	56
	α Arietis E.	72	36	58	70	54	32	69	11	45	67	28	37
	Aldebaran E.	103	10	20	101	28	16	99	45	50	98	3	1
9	SUN W.	112	45	47	114	24	40	116	3	54	117	43	29
	Venus W.	84	14	25	85	51	31	87	28	58	89	6	47
	Mars W.	61	0	37	62	41	12	64	22	9	66	3	29
	α Aquilæ W.	49	0	57	50	12	29	51	25	44	52	40	38
10	α Arietis E.	58	48	5	57	3	1	55	17	40	53	32	2
	Aldebaran E.	89	23	20	87	38	18	85	52	55	84	7	11
	SUN W.	126	6	32	127	48	8	129	30	2	131	12	14
	Venus W.	97	21	6	99	0	58	100	41	10	102	21	40
11	Mars W.	74	35	23	76	18	47	78	2	31	79	46	33
	α Aquilæ W.	59	16	31	60	39	24	62	3	22	63	28	19
	α Arietis E.	44	40	3	42	53	1	41	5	50	39	18	32
	Aldebaran E.	75	13	33	73	25	54	71	37	58	69	49	45
12	Saturn E.	111	35	46	109	46	55	107	57	44	106	8	14
	Mars W.	88	31	5	90	16	47	92	2	43	93	48	52

MEAN TIME.									
LUNAR DISTANCES.									
Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.	
	° ' "		° ' "		° ' "		° ' "		
1 SUN W.	45 42 5	3220	47 7 50	3211	48 33 46	3201	49 59 54	3190	
Fomalhaut E.	66 23 20	3102	64 55 13	3100	63 27 3	3097	61 58 50	3096	
α Pegasi E.	88 4 46	3164	86 37 54	3157	85 10 53	3149	83 43 42	3142	
Jupiter E.	94 40 2	2826	93 6 8	2818	91 32 4	2809	89 57 48	2800	
2 SUN W.	57 13 42	3136	58 41 8	3125	60 8 47	3114	61 36 40	3101	
Venus W.	29 51 46	3248	31 16 58	3235	32 42 26	3220	34 8 11	3207	
Fomalhaut E.	54 37 35	3099	53 9 24	3102	51 41 17	3106	50 13 14	3112	
α Pegasi E.	76 25 42	3109	74 57 43	3103	73 29 37	3098	72 1 25	3092	
Jupiter E.	82 3 25	2751	80 27 53	2741	78 52 8	2730	77 16 8	2719	
3 SUN W.	68 59 55	3037	70 29 22	3024	71 59 5	3010	73 29 6	2996	
Venus W.	41 21 5	3136	42 48 31	3121	44 16 15	3106	45 44 17	3091	
Fomalhaut E.	42 55 27	3169	41 28 41	3188	40 2 18	3211	38 36 22	3240	
α Pegasi E.	64 39 6	3077	63 10 28	3076	61 41 49	3075	60 13 9	3077	
Jupiter E.	69 12 26	2661	67 34 54	2649	65 57 6	2636	64 19 0	2624	
4 SUN W.	81 3 36	2923	82 35 26	2908	84 7 35	2892	85 40 4	2876	
Venus W.	53 9 6	3014	54 39 1	2998	56 9 17	2982	57 39 52	2965	
Mars W.	28 48 27	2869	30 21 26	2851	31 54 48	2833	33 28 33	2815	
α Pegasi E.	52 50 39	3101	51 22 31	3113	49 54 37	3126	48 26 59	3142	
Jupiter E.	56 4 8	2556	54 24 13	2543	52 44 0	2529	51 3 27	2514	
α Arietis E.	92 40 2	2621	91 1 36	2607	89 22 50	2593	87 43 45	2579	
5 SUN W.	93 27 33	2797	95 2 5	2780	96 36 59	2764	98 12 14	2748	
Venus W.	65 18 1	2883	66 50 42	2866	68 23 45	2849	69 57 9	2832	
Mars W.	41 23 2	2728	42 59 5	2711	44 35 30	2694	46 12 18	2677	
α Pegasi E.	41 15 9	3285	39 50 40	3331	38 27 5	3386	37 4 33	3449	
Jupiter E.	42 35 39	2441	40 53 3	2426	39 10 6	2411	37 26 47	2396	
α Arietis E.	79 23 22	2506	77 42 17	2491	76 0 51	2477	74 19 5	2462	
6 SUN W.	106 13 54	2666	107 51 20	2650	109 29 7	2634	111 7 16	2618	
Venus W.	77 49 43	2747	79 25 20	2730	81 1 20	2714	82 37 42	2698	
Mars W.	54 22 1	2593	56 1 6	2576	57 40 34	2560	59 20 24	2543	
Jupiter E.	28 44 48	2321	26 59 19	2305	25 13 27	2291	23 27 14	2276	
α Arietis E.	65 45 10	2391	64 1 22	2378	62 17 16	2364	60 32 50	2351	
Aldebaran E.	96 19 49	2400	94 36 15	2385	92 52 19	2369	91 8 0	2355	
7 SUN W.	119 23 25	2540	121 3 42	2526	122 44 19	2512	124 25 16	2498	
Venus W.	90 44 58	2618	92 23 29	2602	94 2 21	2587	95 41 34	2573	
Mars W.	67 45 9	2465	69 27 12	2450	71 9 35	2436	72 52 19	2422	
α Aquilæ W.	53 57 4	3638	55 14 57	3562	56 34 1	3500	57 54 46	3428	
α Arietis E.	51 46 7	2293	49 59 57	2283	48 13 1	2270	46 54 26	2265	
Aldebaran E.	82 21 7	2283	80 34 42	2270	78 47 1	2257	76 55 0	2244	
8 SUN W.	132 54 43	2434	134 37 29	2423	136 11 17	2411	138 1 48	2403	
Venus W.	104 2 28	2506	105 43 33	2494	107 1 1	2481	108 6 34	2471	
Mars W.	81 30 54	2356	83 15 32	2344	84 2 3	2331	85 11 28	2322	
α Aquilæ W.	64 54 13	3169	66 20 59	3128	68 2 59	3100	70 1 59	3072	
α Arietis E.	37 31 9	2241	35 43 43	2227	33 56 1	2212	32 5 1	2197	
Aldebaran E.	68 1 17	2190	66 12 34	218	64 1 17	2165	62 11 17	2150	
Saturn E.	104 18 24	2133	102 28 16	212	100 44 1	2107	98 58 1	2092	
9 Mars W.	95 35 13	2277	97 21 46	2261	98 43 13	2245	100 32 50	2229	

MEAN TIME.																
LUNAR DISTANCES.																
Day of the Month.	Star's Name and Position.	Noon.			P.L. of diff.	III ^h .			P.L. of diff.	VI ^h .			P.L. of diff.	IX ^h .		
		°	'	"		°	'	"		°	'	"		°	'	"
9	α Aquilæ W.	70	45	58	3025	72	15	40	2996	73	45	58	2970	75	16	4
	Fomalhaut W.	39	59	16	2591	41	38	23	2546	43	18	32	2506	44	59	1
	Aldebaran E.	60	45	8	2159	58	55	38	2153	57	5	59	2147	55	16	1
	Saturn E.	96	56	11	2091	95	4	58	2081	93	13	30	2073	91	21	4
	Pollux E.	104	7	14	2077	102	15	39	2068	100	23	51	2059	98	31	4
10	Mars W.	102	42	21	2254	104	29	28	2249	106	16	42	2246	108	4	
	α Aquilæ W.	82	57	31	2864	84	30	36	2854	86	3	54	2847	87	37	2
	Fomalhaut W.	53	36	13	2338	55	21	17	2320	57	6	48	2304	58	52	4
	α Pegasi W.	35	18	59	3078	36	47	36	2982	38	18	11	2901	39	50	2
	Jupiter W.	22	32	28	2006	24	25	53	2002	26	19	24	1999	28	13	
	Aldebaran E.	46	6	27	2143	44	16	34	2147	42	26	47	2154	40	37	1
	Saturn E.	82	0	37	2035	80	7	57	2030	78	15	10	2028	76	22	1
	Pollux E.	89	8	54	2021	87	15	52	2017	85	22	44	2014	83	29	3
11	α Aquilæ W.	95	25	17	2850	96	58	40	2859	98	31	52	2870	100	4	5
	Fomalhaut W.	67	46	29	2245	69	33	49	2241	71	21	15	2239	73	8	4
	α Pegasi W.	47	51	24	2592	49	30	30	2562	51	10	17	2536	52	50	4
	Jupiter W.	37	41	39	1994	39	35	22	1996	41	29	3	1998	43	22	4
	Saturn E.	66	57	29	2025	65	4	33	2028	63	11	42	2030	61	18	5
	Pollux E.	74	2	43	2008	72	9	21	2010	70	16	2	2012	68	22	4
		Regulus E.	110	43	38	2015	108	50	27	2016	106	57	18	2019	105	4
12	Fomalhaut W.	82	6	2	2250	83	53	15	2257	85	40	18	2264	87	27	1
	α Pegasi W.	61	19	0	2447	63	1	28	2441	64	44	4	2437	66	26	4
	Jupiter W.	52	49	1	2030	54	41	49	2037	56	34	25	2046	58	26	4
	Saturn E.	51	57	8	2069	50	5	21	2079	48	13	49	2089	46	22	3
	Pollux E.	58	58	12	2043	57	5	45	2051	55	13	30	2059	53	21	2
		Regulus E.	95	40	24	2048	93	48	5	2056	91	55	58	2064	90	4
13	Fomalhaut W.	96	17	55	2331	98	3	10	2346	99	48	3	2361	101	32	3
	α Pegasi W.	75	0	0	2453	76	42	20	2460	78	24	30	2469	80	6	2
	Jupiter W.	67	44	51	2110	69	35	35	2123	71	25	59	2136	73	16	
	α Arietis W.	31	38	58	2275	33	25	35	2274	35	12	13	2275	36	58	5
	Saturn E.	37	11	14	2175	35	22	9	2194	33	33	32	2215	31	45	2
	Pollux E.	44	5	9	2124	42	14	47	2137	40	24	44	2150	38	35	
		Regulus E.	80	48	22	2128	78	58	6	2141	77	8	10	2155	75	18
14	α Pegasi W.	88	32	2	2547	90	12	10	2564	91	51	55	2581	93	31	11
	Jupiter W.	82	20	51	2227	84	8	38	2243	85	56	1	2261	87	42	5
	α Arietis W.	45	49	48	2320	47	35	19	2332	49	20	32	2344	51	5	2
	Aldebaran W.	17	11	19	2993	18	41	41	2881	20	14	24	2801	21	48	5
	Pollux E.	29	32	7	2244	27	44	45	2261	25	57	48	2279	24	11	11
		Regulus E.	66	16	4	2246	64	28	45	2263	62	41	51	2280	60	55
15	Jupiter W.	96	31	17	2368	98	15	37	2387	99	59	31	2406	101	42	5
	α Arietis W.	59	44	50	2435	61	27	35	2451	63	9	57	2469	64	51	54
	Aldebaran W.	29	54	48	2623	31	33	12	2618	33	11	43	2617	34	50	13
	Regulus E.	52	9	29	2389	50	25	39	2409	48	42	17	2428	46	59	22
	SUN E.	137	18	4	2717	135	41	47	2738	134	5	57	2757	132	30	32
16	Jupiter W.	110	13	28	2519	111	54	15	2538	113	34	35	2557	115	14	29
	α Arietis W.	73	15	36	2575	74	55	6	2593	76	34	11	2610	78	12	52

MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
9	α Aquilæ W.	76 48 10	2924	78 19 58	2906	79 52 9	2890	81 24 41	2876
	Fomalhaut W.	46 41 33	2437	48 24 15	2408	50 7 39	2382	51 51 39	2359
	Aldebaran E.	53 26 19	2141	51 36 23	2140	49 46 24	2139	47 56 24	2141
	Saturn E.	89 29 56	2057	87 37 51	2050	85 45 35	2045	83 53 11	2039
	Pollux E.	96 39 35	2044	94 47 10	2037	92 54 34	2031	91 1 48	2026
10	Mars W.	109 51 24	2242	111 38 49	2241	113 26 16	2241	115 13 43	2241
	α Aquilæ W.	89 10 55	2839	90 44 32	2838	92 18 10	2840	93 51 46	2844
	Fomalhaut W.	60 38 57	2278	62 25 29	2267	64 12 17	2258	65 59 18	2251
	α Pegasi W.	41 24 16	2769	42 59 25	2715	44 35 45	2669	46 13 7	2628
	Jupiter W.	30 6 40	1994	32 0 23	1993	33 54 8	1993	35 47 54	1993
	Aldebaran E.	38 47 47	2174	36 58 40	2188	35 9 54	2205	33 21 34	2226
	Saturn E.	74 29 23	2023	72 36 25	2023	70 43 26	2023	68 50 27	2023
	Pollux E.	81 36 13	2008	79 42 52	2008	77 49 30	2007	75 56 6	2007
11	α Aquilæ W.	101 37 31	2898	103 9 52	2917	104 41 49	2938	106 13 20	2961
	Fomalhaut W.	74 56 16	2238	76 43 47	2239	78 31 17	2242	80 18 42	2245
	α Pegasi W.	54 31 36	2494	56 12 57	2478	57 54 41	2465	59 36 43	2455
	Jupiter W.	45 16 11	2006	47 9 36	2011	49 2 53	2016	50 56 2	2023
	Saturn E.	59 26 15	2040	57 33 43	2046	55 41 21	2052	53 49 8	2060
	Pollux E.	66 29 37	2019	64 36 33	2024	62 43 37	2030	60 50 50	2036
	Regulus E.	103 11 13	2026	101 18 19	2030	99 25 32	2035	97 32 53	2042
12	Fomalhaut W.	89 13 50	2282	91 0 16	2292	92 46 27	2304	94 32 20	2317
	α Pegasi W.	68 9 30	2436	69 52 13	2438	71 34 54	2441	73 17 31	2446
	Jupiter W.	60 18 57	2064	62 10 51	2075	64 2 28	2086	65 53 49	2098
	Saturn E.	44 31 36	2113	42 40 57	2127	40 50 39	2142	39 0 44	2158
	Pollux E.	51 29 40	2078	49 38 7	2088	47 46 50	2100	45 55 51	2111
	Regulus E.	88 12 23	2083	86 20 58	2094	84 29 49	2105	82 38 57	2116
13	Fomalhaut W.	103 16 41	2396	105 0 22	2414	106 43 37	2433	108 26 24	2454
	α Pegasi W.	81 48 9	2491	83 29 35	2503	85 10 44	2517	86 51 33	2532
	Jupiter W.	75 5 46	2165	76 55 7	2180	78 44 5	2195	80 32 40	2211
	α Arietis W.	38 45 22	2283	40 31 46	2290	42 18 0	2299	44 4 1	2309
	Saturn E.	29 57 54	2261	28 10 57	2288	26 24 40	2318	24 39 7	2352
	Pollux E.	36 45 41	2179	34 56 42	2195	33 8 7	2211	31 19 55	2227
	Regulus E.	73 29 19	2183	71 40 26	2198	69 51 55	2214	68 3 48	2229
14	α Pegasi W.	95 10 12	2618	96 48 42	2639	98 26 44	2660	100 4 18	2681
	Jupiter W.	89 29 30	2296	91 15 36	2313	93 1 16	2332	94 46 29	2349
	α Arietis W.	52 50 2	2372	54 34 17	2387	56 18 10	2403	58 1 41	2418
	Aldebaran W.	23 24 37	2698	25 1 19	2667	26 38 43	2646	28 16 35	2631
	Pollux E.	22 25 14	2317	20 39 39	2337	18 54 33	2357	17	2378
	Regulus E.	59 9 18	2315	57 23 41	2333	55 38 30	2352		71
15	Jupiter W.	103 25 57	2443	105 8 30	2463	106 50 36	2481		
	α Arietis W.	66 33 28	2503	68 14 37	2521	69 55 21			
	Aldebaran W.	36 28 43	2624	38 7 6	2630	39 45 20			
	Regulus E.	45 16 55	2467	43 34 55	2487	41 53 2			
	SUN E.	130 55 33	2797	129 21 1	2816	127 46 1			
16	Jupiter W.	116 53 58	2595	118 33 0	2613	120 11			
	α Arietis W.	79 51 8	2646	81 29 0	2665	83 6			

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .						
		°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.	°	'	"	P.L. of diff.
16	Aldebaran W.	43	1	15	2658	44	38	51	2669	46	16	13	2681	47	53	18	2694
	Regulus E.	38	31	44	2548	36	51	37	2567	35	11	57	2588	33	32	46	2609
	Spica ♃	92	28	23	2529	90	47	50	2548	89	7	43	2566	87	28	2	2585
	SUN E.	124	39	59	2877	123	7	10	2897	121	34	47	2916	120	2	49	2937
17	α Arietis W.	86	20	11	2718	87	56	27	2735	89	32	20	2752	91	7	51	2769
	Aldebaran W.	55	54	19	2763	57	29	35	2777	59	4	33	2791	60	39	12	2806
	Saturn W.	19	46	59	2849	21	20	23	2842	22	53	57	2838	24	27	36	2838
	Spica ♃	79	15	55	2675	77	38	42	2693	76	1	53	2711	74	25	27	2728
SUN E.	112	29	15	3034	110	59	45	3053	109	30	38	3072	108	1	54	3091	
18	Aldebaran W.	68	27	46	2877	70	0	34	2891	71	33	5	2904	73	5	19	2917
	Saturn W.	32	14	47	2868	33	47	17	2877	35	20	35	2886	36	53	11	2896
	Pollux W.	24	21	54	2815	25	56	3	2829	27	29	53	2843	29	3	25	2857
	Spica ♃	66	28	47	2808	64	54	30	2823	63	20	32	2838	61	46	53	2852
SUN E.	100	43	43	3178	99	17	7	3194	97	50	51	3210	96	24	54	3225	
19	Aldebaran W.	80	42	21	2979	82	13	3	2989	83	43	29	3001	85	13	40	3011
	Saturn W.	44	33	6	2945	46	4	28	2954	47	35	38	2963	49	6	37	2973
	Pollux W.	36	46	49	2920	38	18	43	2931	39	50	22	2943	41	21	46	2954
	Spica ♃	54	3	6	2917	52	31	9	2930	50	59	28	2942	49	28	2	2952
SUN E.	89	19	35	3297	87	55	20	3310	86	31	20	3323	85	7	35	3335	
20	Aldebaran W.	92	41	26	3060	94	10	24	3069	95	39	12	3076	97	7	51	3084
	Saturn W.	56	38	45	3014	58	8	41	3021	59	38	28	3027	61	8	7	3034
	Pollux W.	48	55	36	3001	50	25	48	3009	51	55	49	3016	53	25	42	3024
	Regulus W.	12	37	1	3138	14	4	24	3121	15	32	8	3109	17	0	7	3101
Spica ♃	41	54	8	3002	40	23	57	3010	38	53	56	3018	37	24	5	3025	
SUN E.	78	12	10	3389	76	49	41	3397	75	27	21	3407	74	5	12	3415	
21	Saturn W.	68	34	33	3060	70	3	32	3064	71	32	26	3068	73	1	15	3071
	Pollux W.	60	52	58	3053	62	22	5	3058	63	51	6	3063	65	20	1	3066
	Regulus W.	24	21	24	3092	25	49	43	3093	27	18	1	3093	28	46	19	3095
	Spica ♃	29	57	0	3057	28	27	58	3062	26	59	2	3067	25	30	12	3071
SUN E.	67	16	35	3449	65	55	14	3454	64	33	59	3459	63	12	49	3463	
22	Saturn W.	80	24	30	3082	81	53	2	3083	83	21	33	3083	84	50	3	3084
	Pollux W.	72	43	42	3078	74	12	18	3080	75	40	52	3081	77	9	25	3081
	Regulus W.	36	7	34	3096	37	35	48	3097	39	4	1	3096	40	32	15	3096
	SUN E.	56	28	7	3480	55	7	20	3482	53	46	36	3483	52	25	53	3485
23	Saturn W.	92	12	35	3080	93	41	9	3078	95	9	45	3077	96	38	23	3074
	Pollux W.	84	32	12	3078	86	0	49	3077	87	29	27	3074	88	58	8	3072
	Regulus W.	47	53	40	3089	49	22	3	3087	50	50	28	3084	52	18	57	3082
	SUN E.	45	42	32	3486	44	21	52	3486	43	1	12	3484	41	40	30	3483
24	Saturn W.	104	2	21	3060	105	31	20	3056	107	0	23	3052	108	29	32	3048
	Pollux W.	96	22	21	3056	97	51	24	3053	99	20	31	3048	100	49	44	3044
	Regulus W.	59	42	15	3065	61	11	8	3061	62	40	6	3056	64	9	10	3051
	SUN E.	34	56	38	3475	33	35	46	3473	32	14	52	3471	30	53	56	3470
30	SUN W.	33	6	53	3116	34	34	43	3105	36	2	46	3093	37	31	4	3082
	Fomalhaut E.	51	30	27	3085	50	1	59	3094	48	33	42	3105	47	5	38	3119
	α Pegasi E.	73	12	28	3063	71	43	33	3061	70	14	35	3059	68	45	35	3058
	Jupiter E.	77	57	6	2731	76	21	7	2722	74	44	56	2714	73	8	35	2706

MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
16	Aldebaran W.	49 30 6	2707	51 6 37	2721	52 42 49	2734	54 18 43	2748
	Regulus E.	31 54 3	2629	30 15 48	2651	28 38 2	2672	27 0 45	2694
	Spica ♀ E.	85 48 47	2604	84 9 57	2622	82 31 32	2640	80 53 31	2658
	SUN E.	118 31 17	2957	117 0 10	2976	115 29 27	2996	113 59 9	3015
17	♌ Arietis W.	92 42 59	2786	94 17 45	2803	95 52 9	2818	97 26 13	2835
	Aldebaran W.	62 13 32	2821	63 47 33	2835	65 21 15	2849	66 54 40	2863
	Saturn W.	26 1 14	2841	27 34 49	2846	29 8 17	2852	30 41 37	2860
	Spica ♀ E.	72 49 24	2744	71 13 43	2760	69 38 23	2777	68 3 25	2792
	SUN E.	106 33 33	3109	105 5 34	3126	103 37 56	3143	102 10 39	3161
18	Aldebaran W.	74 37 16	2931	76 8 56	2943	77 40 21	2955	79 11 30	2967
	Saturn W.	38 25 35	2905	39 57 47	2916	41 29 46	2926	43 1 32	2935
	Pollux W.	30 36 39	2870	32 9 36	2883	33 42 17	2896	35 14 41	2909
	Spica ♀ E.	60 13 33	2866	58 40 30	2880	57 7 46	2893	55 35 18	2905
	SUN E.	94 59 15	3241	93 33 54	3256	92 8 51	3270	90 44 5	3284
19	Aldebaran W.	86 43 38	3022	88 13 23	3033	89 42 55	3042	91 12 16	3051
	Saturn W.	50 37 24	2982	52 7 59	2990	53 38 24	2998	55 8 40	3006
	Pollux W.	42 52 57	2964	44 23 55	2974	45 54 41	2984	47 25 14	2993
	Spica ♀ E.	47 56 49	2963	46 25 50	2973	44 55 4	2983	43 24 30	2993
	SUN E.	83 44 4	3347	82 20 47	3358	80 57 43	3369	79 34 51	3379
20	Aldebaran W.	98 36 20	3092	100 4 40	3099	101 32 51	3105	103 0 54	3112
	Saturn W.	62 37 38	3039	64 7 2	3045	65 36 19	3051	67 5 29	3056
	Pollux W.	54 55 25	3031	56 24 59	3037	57 54 26	3043	59 23 45	3048
	Regulus W.	18 28 15	3096	19 56 29	3094	21 24 46	3092	22 53 5	3092
	Spica ♀ E.	35 54 23	3032	34 24 50	3039	32 55 26	3046	31 26 10	3051
	SUN E.	72 43 12	3423	71 21 21	3430	69 59 38	3437	68 38 3	3443
21	Saturn W.	74 30 0	3074	75 58 42	3077	77 27 20	3078	78 55 56	3080
	Pollux W.	66 48 52	3069	68 17 39	3072	69 46 23	3074	71 15 4	3077
	Regulus W.	30 14 35	3095	31 42 51	3096	33 11 6	3096	34 39 20	3096
	Spica ♀ E.	24 1 27	3076	22 32 48	3079	21 4 13	3084	19 35 44	3087
	SUN E.	61 51 44	3468	60 30 44	3472	59 9 48	3475	57 48 56	3478
22	Saturn W.	86 18 32	3083	87 47 2	3083	89 15 32	3083	90 44 3	3082
	Pollux W.	78 37 58	3081	80 6 31	3081	81 35 4	3080	83 3 38	3080
	Regulus W.	42 0 29	3095	43 28 45	3094	44 57 2	3093	46 25 20	3091
	SUN E.	51 5 12	3485	49 44 31	3487	48 23 52	3486	47 3 12	3486
23	Saturn W.	98 7 4	3072	99 35 48	3069	101 4 35	3066	102 33 26	3063
	Pollux W.	90 26 52	3069	91 55 39	3067	93 24 29	3064	94 53 23	3060
	Regulus W.	53 47 28	3078	55 16 4	3076	56 44 43	3072	58 13 27	3069
	SUN E.	40 19 47	3481	38 59 2	3480	37 38 16	3479	36 17 28	3477
24	Saturn W.	109 58 45	3043	111 28 4	3040	112 57 27	3035	114 26 57	3030
	Pollux W.	102 19 2	3039	103 48 26	3035	105 17 56	3030	106 47 32	3024
	Regulus W.	65 38 20	3047	67 7 35	3041	68 36 57	3036	70 6 25	3031
	SUN E.	29 32 58	3469	28 11 59	3468	26 50 59	3467	25 29 58	3467
25	SUN W.	38 59 35	3072	40 28 19	3061	41 57 16	3050	43 26 27	3040
	Fomalhaut E.	45 37 51	3134	44 10 22	3152	42 43 15	3173	41 16 33	3198
	♌ Pegasi E.	67 16 34	3059	65 47 34	3059	64 18 34	3061	62 49 37	3064
	Jupiter E.	71 32 3	2697	69 55 19	2689	68 18 24	2681	66 41 18	2672

CONFIGURATIONS OF THE SATELLITES OF JUPITER

At 10^h, MEAN TIME.

Day of the Month.	West.	East.
1	1. ○ 2. ●	○ 4.
2		○ 1. 2. 3. 4.
3		○ 3. 4.
4	2.	○ 4. 4.
5	3. 1.	○ 2. 4.
6	3.	○ 4. 4.
7	3. 2. 1.	○ 4.
8	2. ●	○ 1. 4.
9	1. ●	○ 2. 3.
10	4.	○ 3.
11	4.	○ 1. 3.
12	4.	○ 2.
13	4. 3.	○ 1.
14	4. 3. 2. 1.	○
15	4.	○ 1.
16	1. ●	○ 2. 3.
17		○ 4. 3.
18	2.	○ 1. 3. 4.
19		○ 2. 4.
20	3.	○ 1. 2. 4.
21	3. 2. 1.	○ 4.
22		○ 1. 4.
23		○ 2. 4.
24	1. ○	○ 4. 3.
25		○ 3.
26		○ 2.
27	4. 3.	○ 1. 2.
28	4. 3. 2. 1.	○
29	4.	○ 1.
30	4.	○ 3. 2.

This Table represents, at 10^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the Satellites by points. The numerals, 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of their motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the white circle (○) at the left or right hand of the page, denotes that the Satellite placed by it is *on the disc of Jupiter*, and a black circle (●) that it is either *behind the disc*, or *in the shadow*, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^s . 176271. Days.	From Mean Noon of January 1.	
	Logarithm of						Day of the Year.	Fraction of the Year.
	A	B	C	D				
1	+1.1582	+1.1162	+9.8639	-0.9540	9 14 39.11	224	305	.835
2	1.1517	1.1252	9.8656	0.9532	9 10 43.20	225	306	.838
3	1.1451	1.1339	9.8673	0.9524	9 6 47.29	226	307	.841
4	+1.1381	+1.1422	+9.8690	-0.9516	9 2 51.38	227	308	.843
5	1.1310	1.1503	9.8708	0.9507	8 58 55.47	228	309	.846
6	1.1235	1.1581	9.8726	0.9499	8 54 59.56	229	310	.849
7	+1.1158	+1.1656	+9.8743	-0.9491	8 51 3.65	230	311	.851
8	1.1079	1.1729	9.8761	0.9482	8 47 7.74	231	312	.854
9	1.0996	1.1799	9.8779	0.9474	8 43 11.83	232	313	.857
10	+1.0910	+1.1867	+9.8797	-0.9465	8 39 15.92	233	314	.860
11	1.0821	1.1933	9.8815	0.9457	8 35 20.01	234	315	.862
12	1.0729	1.1996	9.8834	0.9449	8 31 24.10	235	316	.865
13	+1.0634	+1.2057	+9.8852	-0.9440	8 27 28.19	236	317	.868
14	1.0535	1.2116	9.8870	0.9432	8 23 32.28	237	318	.871
15	1.0432	1.2173	9.8889	0.9424	8 19 36.37	238	319	.873
16	+1.0325	+1.2228	+9.8907	-0.9416	8 15 40.46	239	320	.876
17	1.0214	1.2281	9.8926	0.9408	8 11 44.54	240	321	.879
18	1.0099	1.2331	9.8945	0.9400	8 7 48.63	241	322	.882
19	+0.9979	+1.2380	+9.8964	-0.9392	8 3 52.72	242	323	.884
20	0.9855	1.2428	9.8983	0.9385	7 59 56.81	243	324	.887
21	0.9725	1.2473	9.9002	0.9377	7 56 0.90	244	325	.890
22	+0.9590	+1.2516	+9.9021	-0.9370	7 52 4.99	245	326	.893
23	0.9449	1.2558	9.9040	0.9363	7 48 9.07	246	327	.895
24	0.9302	1.2598	9.9059	0.9356	7 44 13.16	247	328	.898
25	+0.9148	+1.2636	+9.9078	-0.9349	7 40 17.25	248	329	.901
26	0.8987	1.2673	9.9097	0.9342	7 36 21.34	249	330	.903
27	0.8818	1.2708	9.9117	0.9336	7 32 25.43	250	331	.906
28	+0.8641	+1.2742	+9.9136	-0.9330	7 28 29.51	251	332	.909
29	0.8456	1.2773	9.9155	0.9323	7 24 33.60	252	333	.912
30	0.8260	1.2804	9.9175	0.9318	7 20 37.69	253	334	.914
31	+0.8053	+1.2832	+9.9194	-0.9312	7 16 41.78	254	335	.917

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semidiam. passing the Meridian.*	Equation of Time, to be <u>subt. from</u> added to <u>Apparent Time.</u>	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Mon.	1	h m s 16 31 28.72	a 10.830	S. 21 54 4.1	n 22.30	m a 1 10.33	m a 10 36.03	s 0.971
Tues.	2	16 35 48.64	10.855	22 2 59.4	21.24	1 10.42	10 12.72	0.996
Wed.	3	16 40 9.16	10.879	22 11 29.1	20.16	1 10.50	9 48.83	1.019
Thur.	4	16 44 30.25	10.902	22 19 33.0	19.08	1 10.58	9 24.37	1.042
Frid.	5	16 48 51.88	10.923	22 27 10.7	17.98	1 10.65	8 59.37	1.064
Sat.	6	16 53 14.03	10.943	22 34 22.2	16.87	1 10.72	8 33.84	1.084
Sun.	7	16 57 36.66	10.963	22 41 7.1	15.75	1 10.79	8 7.84	1.103
Mon.	8	17 1 59.76	10.981	22 47 25.2	14.63	1 10.85	7 41.37	1.122
Tues.	9	17 6 23.31	10.998	22 53 16.4	13.50	1 10.91	7 14.46	1.139
Wed.	10	17 10 47.26	11.015	22 58 40.5	12.37	1 10.97	6 47.13	1.155
Thur.	11	17 15 11.61	11.030	23 3 37.3	11.22	1 11.02	6 19.42	1.170
Frid.	12	17 19 36.32	11.044	23 8 6.6	10.08	1 11.07	5 51.35	1.184
Sat.	13	17 24 1.36	11.056	23 12 8.4	8.93	1 11.11	5 22.95	1.196
Sun.	14	17 28 26.71	11.067	23 15 42.6	7.77	1 11.15	4 54.24	1.208
Mon.	15	17 32 52.34	11.078	23 18 48.9	6.60	1 11.18	4 25.25	1.218
Tues.	16	17 37 18.22	11.087	23 21 27.2	5.43	1 11.21	3 56.01	1.227
Wed.	17	17 41 44.31	11.095	23 23 37.6	4.26	1 11.24	3 26.54	1.235
Thur.	18	17 46 10.60	11.102	23 25 19.8	3.08	1 11.26	2 56.90	1.242
Frid.	19	17 50 37.05	11.107	23 26 33.8	1.90	1 11.27	2 27.09	1.247
Sat.	20	17 55 3.62	11.111	23 27 19.5	0.73	1 11.28	1 57.16	1.251
Sun.	21	17 59 30.28	11.113	23 27 37.0	0.45	1 11.29	1 27.14	1.253
Mon.	22	18 3 56.99	11.114	23 27 26.1	1.63	1 11.29	0 57.07	1.253
Tues.	23	18 8 23.72	11.113	23 26 46.9	2.82	1 11.29	0 26.99	1.253
Wed.	24	18 12 50.42	11.110	23 25 39.3	4.00	1 11.28	0 3.07	1.250
Thur.	25	18 17 17.06	11.106	23 24 3.4	5.18	1 11.27	0 33.07	1.246
Frid.	26	18 21 43.61	11.100	23 21 59.1	6.36	1 11.25	1 2.97	1.240
Sat.	27	18 26 10.01	11.093	23 19 26.6	7.53	1 11.23	1 32.73	1.233
Sun.	28	18 30 36.24	11.084	23 16 26.0	8.70	1 11.21	2 2.33	1.224
Mon.	29	18 35 2.26	11.073	23 12 57.3	9.86	1 11.18	2 31.71	1.214
Tues.	30	18 39 28.02	11.061	23 9 0.7	11.02	1 11.14	3 0.84	1.202
Wed.	31	18 43 53.50	11.048	23 4 36.2	12.17	1 11.10	3 29.67	1.188
Thur.	32	18 48 18.65		S. 22 59 44.1		1 11.06	3 58.19	

* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to subtr. from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semidiam.*		
Mon.	1	h m s 16 31 30.63	S. 21 54 8.0	16 15.9	m s 10 35.86	h m s 16 42 6.49
Tues.	2	16 35 50.49	22 3 3.0	16 16.0	10 12.55	16 46 3.04
Wed.	3	16 40 10.94	22 11 32.4	16 16.2	9 48.66	16 49 59.60
Thur.	4	16 44 31.95	22 19 36.0	16 16.3	9 24.21	16 53 56.16
Frid.	5	16 48 53.51	22 27 13.4	16 16.5	8 59.21	16 57 52.72
Sat.	6	16 53 15.59	22 34 24.6	16 16.6	8 33.69	17 1 49.28
Sun.	7	16 57 38.15	22 41 9.2	16 16.7	8 7.69	17 5 45.84
Mon.	8	17 2 1.17	22 47 27.0	16 16.8	7 41.22	17 9 42.39
Tues.	9	17 6 24.63	22 53 18.0	16 17.0	7 14.32	17 13 38.95
Wed.	10	17 10 48.51	22 58 41.8	16 17.1	6 47.00	17 17 35.51
Thur.	11	17 15 12.77	23 3 38.4	16 17.2	6 19.30	17 21 32.07
Frid.	12	17 19 37.39	23 8 7.6	16 17.3	5 51.24	17 25 28.63
Sat.	13	17 24 2.35	23 12 9.3	16 17.4	5 22.84	17 29 25.19
Sun.	14	17 28 27.61	23 15 43.2	16 17.5	4 54.14	17 33 21.75
Mon.	15	17 32 53.15	23 18 49.4	16 17.6	4 25.16	17 37 18.31
Tues.	16	17 37 18.94	23 21 27.6	16 17.7	3 55.93	17 41 14.87
Wed.	17	17 41 44.95	23 23 37.8	16 17.8	3 26.47	17 45 11.42
Thur.	18	17 46 11.14	23 25 19.9	16 17.8	2 56.84	17 49 7.98
Frid.	19	17 50 37.50	23 26 33.9	16 17.9	2 27.04	17 53 4.54
Sat.	20	17 55 3.98	23 27 19.6	16 17.9	1 57.12	17 57 1.10
Sun.	21	17 59 30.55	23 27 37.0	16 18.0	1 27.11	18 0 57.66
Mon.	22	18 3 57.17	23 27 26.1	16 18.0	0 57.05	18 4 54.22
Tues.	23	18 8 23.80	23 26 46.9	16 18.0	0 26.98	18 8 50.78
Wed.	24	18 12 50.41	23 25 39.3	16 18.1	0 3.07	18 12 47.34
Thur.	25	18 17 16.96	23 24 3.4	16 18.1	0 33.06	18 16 43.90
Frid.	26	18 21 43.41	23 21 59.2	16 18.1	1 2.00	18 20 40.46
Sat.	27	18 26 9.72	23 19 26.9	16 18.1	1 32.00	18 24 37.02
Sun.	28	18 30 35.86	23 16 26.3	16 18.2	2	18 28 33.57
Mon.	29	18 35 1.79	23 12 57.8	16 18.2	2	18 30 30.13
Tues.	30	18 39 27.47	23 9 1.3	16 18.2	1	18 32 26.69
Wed.	31	18 43 52.85	23 4 36.9	16 18.2	1	18 34 3.23
Thur.	32	18 48 17.92	S. 22 59 44.9	16 18.2	1	18 36 1.8

* The Semidiameter for Apparent Noon may be assumed the s.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	THE MOON'S			
	Longitude.	Latitude.		Semidiameter.		Horizontal Parallel.	
	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Midnight.</i>	<i>Noon.</i>	<i>Midnight.</i>
	° ' "	"	"	' "	' "	' "	' "
1	249 32 56.7	S. 0.36	9.9936862	15 27.1	15 31.3	56 42.1	56 5
2	250 33 50.7	0.31	9.9936195	15 35.7	15 40.1	57 13.7	57 3
3	251 34 45.5	0.23	9.9935544	15 44.7	15 49.4	57 46.9	58 1
4	252 35 41.1	0.13	9.9934912	15 54.0	15 58.7	58 20.9	58 3
5	253 36 37.5	S. 0.01	9.9934299	16 3.2	16 7.6	58 54.7	59 1
6	254 37 34.5	N. 0.12	9.9933707	16 11.8	16 15.6	59 26.1	59 4
7	255 38 32.1	0.25	9.9933137	16 18.9	16 21.7	59 52.3	60
8	256 39 30.4	0.38	9.9932591	16 23.8	16 25.1	60 10.2	60 1
9	257 40 29.3	0.49	9.9932070	16 25.5	16 25.1	60 16.6	60 1
10	258 41 28.9	0.60	9.9931573	16 23.6	16 21.2	60 9.6	60
11	259 42 29.3	0.68	9.9931103	16 17.9	16 13.7	59 48.6	59
12	260 43 30.3	0.73	9.9930659	16 8.7	16 3.0	59 14.9	58
13	261 44 32.1	0.76	9.9930244	15 56.8	15 50.3	58 31.4	58
14	262 45 34.6	0.75	9.9929856	15 43.5	15 36.6	57 42.3	57
15	263 46 38.0	0.71	9.9929495	15 29.8	15 23.2	56 52.0	56
16	264 47 42.1	0.64	9.9929159	15 16.8	15 10.9	56 4.5	55
17	265 48 47.0	0.55	9.9928849	15 5.5	15 0.7	55 23.1	55
18	266 49 52.7	0.43	9.9928563	14 56.5	14 53.0	54 49.9	54
19	267 50 59.3	0.31	9.9928301	14 50.2	14 48.1	54 26.7	54
20	268 52 6.7	0.18	9.9928062	14 46.7	14 46.0	54 13.9	54
21	269 53 14.8	N. 0.04	9.9927844	14 46.0	14 46.7	54 11.4	54
22	270 54 23.5	S. 0.09	9.9927646	14 48.0	14 49.8	54 18.6	54
23	271 55 32.8	0.20	9.9927467	14 52.2	14 55.1	54 34.3	54
24	272 56 42.6	0.30	9.9927306	14 58.4	15 2.1	54 57.0	55
25	273 57 52.9	0.37	9.9927161	15 6.0	15 10.2	55 24.8	55
26	274 59 3.5	0.41	9.9927032	15 14.5	15 18.8	55 55.8	56
27	276 0 14.3	0.43	9.9926920	15 23.2	15 27.6	56 27.8	56
28	277 1 25.3	0.42	9.9926825	15 31.8	15 35.8	56 59.3	57
29	278 2 36.3	0.37	9.9926748	15 39.7	15 43.4	57 28.6	57
30	279 3 47.3	0.30	9.9926688	15 46.9	15 50.3	57 55.1	58
31	280 4 58.1	0.20	9.9926645	15 53.3	15 56.2	58 18.4	58
32	281 6 8.6	S. 0.10	9.9926621	15 58.8	16 1.2	58 38.5	58

MEAN TIME.

Day of the Month.	THE MOON'S					
	Longitude.		Latitude.		Age.	Meridian
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Passage.
	° ' "	° ' "	° ' "	° ' "	d	h m
1	294 15 34.3	300 48 51.4	S. 5 0 13.0	S. 4 51 53.3	3.8	3 13.6
2	307 25 12.7	314 4 42.4	4 39 36.7	4 23 27.1	4.8	4 7.1
3	320 47 25.9	327 33 29.0	4 3 32.5	3 40 3.1	5.8	4 58.2
4	334 22 58.0	341 15 58.5	3 13 13.8	2 43 22.7	6.8	5 47.2
5	348 12 35.9	355 12 52.5	2 10 50.6	1 36 3.9	7.8	6 34.8
6	2 16 47.7	9 24 16.7	S. 0 59 31.4	S. 0 21 45.8	8.8	7 22.3
7	16 35 9.0	23 49 8.0	N. 0 16 36.6	N. 0 54 57.8	9.8	8 11.3
8	31 5 49.6	38 24 41.9	1 32 37.0	2 8 53.2	10.8	9 3.2
9	45 45 6.0	53 6 15.3	2 43 5.8	3 14 36.5	11.8	9 59.0
10	60 27 17.6	67 47 17.2	3 42 50.0	4 7 15.5	12.8	10 59.0
11	75 5 16.2	82 20 17.4	4 27 29.3	4 43 13.8	13.8	12 2.0
12	89 31 26.8	96 37 56.2	4 54 18.3	5 0 40.2	14.8	13 5.3
13	103 39 4.9	110 34 20.5	5 2 23.0	4 59 35.7	15.8	14 5.9
14	117 23 20.7	124 5 53.6	4 52 32.7	4 41 31.6	16.8	15 1.7
15	130 41 56.3	137 11 35.9	4 26 52.6	4 8 58.5	17.8	15 52.2
16	143 35 7.3	149 52 53.3	3 48 11.1	3 24 53.0	18.8	16 37.9
17	156 5 21.8	162 13 6.3	2 59 26.6	2 32 13.5	19.8	17 20.1
18	168 16 43.7	174 16 53.8	2 3 33.6	1 33 46.7	20.8	18 0.0
19	180 14 17.8	186 9 38.4	1 3 11.6	N. 0 32 5.8	21.8	18 38.9
20	192 3 37.7	197 56 58.0	N. 0 0 47.2	S. 0 30 27.8	22.8	19 18.2
21	203 50 19.7	209 44 22.5	S. 1 1 21.9	1 31 38.3	23.8	19 58.9
22	215 39 43.0	221 36 55.7	2 0 59.7	2 29 9.1	24.8	20 42.2
23	227 36 31.2	233 38 57.2	2 55 48.3	3 20 39.2	25.8	21 29.0
24	239 44 36.4	245 53 47.4	3 43 24.2	4 3 44.1	26.8	22 19.6
25	252 6 43.8	258 23 34.2	4 21 21.5	4 35 58.9	27.8	23 13.8
26	264 44 22.4	271 9 7.1	4 47 19.9	4 55 10.0	28.8	0
27	277 37 43.0	284 10 0.2	4 59 16.7	4 59 30.3	0.1	0 10.3
28	290 45 46.5	297 24 46.8	4 55 44.6	4 47 56.0	1.1	1 7.1
29	304 6 45.0	310 51 25.0	4 36 5.8	4 20 19.2	2.1	2 2.5
30	317 38 30.4	324 27 46.8	4 0 45.3	3 37 37.5	3.1	2 55.1
31	331 19 1.5	338 12 4.2	3 11 12.6	2 41 52.1	4.1	3 45.1
32	345 6 47.1	352 3 5.1	S. 2 10 0.3	S. 1 36 3.7	5.1	4 32.9

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>MONDAY 1.</i>				<i>WEDNESDAY 3.</i>			
0	19 48 34.00	S. 26 12 18.0	65.24	0	21 38 12.22	S. 18 25 10.3	126.93
1	19 50 56.05	26 5 46.5	66.74	1	21 40 23.64	18 12 28.7	127.96
2	19 53 17.93	25 59 6.1	68.22	2	21 42 34.84	17 59 40.9	128.98
3	19 55 39.63	25 52 16.8	69.70	3	21 44 45.82	17 46 47.0	129.99
4	19 58 1.15	25 45 18.6	71.18	4	21 46 56.59	17 33 47.1	130.98
5	20 0 22.49	25 38 11.5	72.64	5	21 49 7.14	17 20 41.2	131.96
6	20 2 43.64	25 30 55.6	74.10	6	21 51 17.48	17 7 29.4	132.94
7	20 5 4.60	25 23 31.0	75.55	7	21 53 27.61	16 54 11.8	133.90
8	20 7 25.36	25 15 57.7	76.99	8	21 55 37.53	16 40 48.5	134.84
9	20 9 45.92	25 8 15.7	78.43	9	21 57 47.25	16 27 19.4	135.78
10	20 12 6.29	25 0 25.1	79.86	10	21 59 56.77	16 13 44.7	136.70
11	20 14 26.44	24 52 26.0	81.28	11	22 2 6.09	16 0 4.5	137.60
12	20 16 46.39	24 44 18.3	82.69	12	22 4 15.21	15 46 18.8	138.50
13	20 19 6.13	24 36 2.2	84.09	13	22 6 24.14	15 32 27.7	139.40
14	20 21 25.65	24 27 37.7	85.48	14	22 8 32.89	15 18 31.3	140.28
15	20 23 44.96	24 19 4.8	86.86	15	22 10 41.45	15 4 29.6	141.15
16	20 26 4.05	24 10 23.6	88.24	16	22 12 49.82	14 50 22.7	142.00
17	20 28 22.91	24 1 34.2	89.61	17	22 14 58.02	14 36 10.7	142.84
18	20 30 41.56	23 52 36.5	90.96	18	22 17 6.04	14 21 53.7	143.67
19	20 32 59.98	23 43 30.8	92.31	19	22 19 13.89	14 7 31.7	144.48
20	20 35 18.17	23 34 16.9	93.65	20	22 21 21.56	13 53 4.8	145.28
21	20 37 36.13	23 24 55.0	94.98	21	22 23 29.08	13 38 33.1	146.08
22	20 39 53.86	23 15 25.1	96.30	22	22 25 36.43	13 23 56.6	146.86
23	20 42 11.36	S. 23 5 47.4	97.61	23	22 27 43.62	S. 13 9 15.5	147.63
<i>TUESDAY 2.</i>				<i>THURSDAY 4.</i>			
0	20 44 28.63	S. 22 56 1.7	98.91	0	22 29 50.66	S. 12 54 29.7	148.38
1	20 46 45.67	22 46 8.2	100.20	1	22 31 57.55	12 39 39.4	149.10
2	20 49 2.46	22 36 7.0	101.48	2	22 34 4.29	12 24 44.7	149.82
3	20 51 19.03	22 25 58.2	102.75	3	22 36 10.89	12 9 45.5	150.53
4	20 53 35.35	22 15 41.7	104.01	4	22 38 17.36	11 54 42.1	151.24
5	20 55 51.44	22 5 17.6	105.26	5	22 40 23.68	11 39 34.4	151.93
6	20 58 7.29	21 54 46.1	106.50	6	22 42 29.88	11 24 22.5	152.60
7	21 0 22.90	21 44 7.1	107.72	7	22 44 35.96	11 9 6.6	153.31
8	21 2 38.28	21 33 20.8	108.94	8	22 46 41.91	10 53 46.6	153.99
9	21 4 53.41	21 22 27.1	110.15	9	22 48 47.75	10 38 22.7	154.64
10	21 7 8.31	21 11 26.3	111.34	10	22 50 53.47	10 22 54.8	155.27
11	21 9 22.97	21 0 18.2	112.53	11	22 52 59.09	10 7 23.2	155.89
12	21 11 37.39	20 49 3.0	113.70	12	22 55 4.61	9 51 47.9	156.50
13	21 13 51.58	20 37 40.8	114.86	13	22 57 10.03	9 36 8.9	157.10
14	21 16 5.53	20 26 11.6	116.02	14	22 59 15.35	9 20 26.3	157.68
15	21 18 19.24	20 14 35.5	117.16	15	23 1 20.59	9 4 40.2	158.25
16	21 20 32.72	20 2 52.5	118.29	16	23 3 25.75	8 48 50.7	158.81
17	21 22 45.96	19 51 2.8	119.41	17	23 5 30.82	8 32 57.8	159.36
18	21 24 58.97	19 39 6.4	120.52	18	23 7 35.82	8 17 1.7	159.89
19	21 27 11.75	19 27 3.3	121.61	19	23 9 40.75	8 1 2.4	160.41
20	21 29 24.30	19 14 53.6	122.70	20	23 11 45.61	7 44 59.9	160.91
21	21 31 36.62	19 2 37.4	123.78	21	23 13 50.42	7 28 54.5	161.41
22	21 33 48.71	18 50 14.7	124.84	22	23 15 55.17	7 12 46.0	161.89
23	21 36 0.58	18 37 45.7	125.89	23	23 17 59.87	6 56 34.7	162.35
24	21 38 12.22	S. 18 25 10.3		24	23 20 4.52	S. 6 40 20.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>FRIDAY 5.</i>				<i>SUNDAY 7.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
1	23 20 4.52	S. 6 40 20.6	162.80	1	1 0 41.87	N. 6 46 51.3	167.95
2	23 22 9.14	6 24 3.8	163.25	2	1 2 51.05	7 3 39.0	167.68
3	23 24 13.72	6 7 44.3	163.67	3	1 5 0.47	7 20 25.1	167.38
4	23 26 18.28	5 51 22.3	164.09	4	1 7 10.12	7 37 9.4	167.07
5	23 28 22.81	5 34 57.7	164.49	5	1 9 20.01	7 53 51.8	166.75
6	23 30 27.32	5 18 30.8	164.88	6	1 11 30.16	8 10 32.3	166.40
7	23 32 31.82	5 2 1.5	165.25	7	1 13 40.56	8 27 10.7	166.04
8	23 34 36.31	4 45 30.0	165.61	8	1 15 51.22	8 43 46.9	165.66
9	23 36 40.80	4 28 56.3	165.96	9	1 18 2.14	9 0 20.9	165.26
10	23 38 45.29	4 12 20.6	166.29	10	1 20 13.33	9 16 52.5	164.85
11	23 40 49.79	3 55 42.8	166.62	11	1 22 24.79	9 33 21.6	164.41
12	23 42 54.30	3 39 3.1	166.92	12	1 24 36.54	9 49 48.0	163.96
13	23 44 58.83	3 22 21.6	167.22	13	1 26 48.57	10 6 11.8	163.49
14	23 47 3.39	3 5 38.3	167.50	14	1 29 0.89	10 22 32.7	163.00
15	23 49 7.98	2 48 53.3	167.76	15	1 31 13.50	10 38 50.7	162.49
16	23 51 12.60	2 32 6.8	168.01	16	1 33 26.41	10 55 5.7	161.96
17	23 53 17.26	2 15 18.7	168.25	17	1 35 39.63	11 11 17.4	161.42
18	23 55 21.97	1 58 29.2	168.48	18	1 37 53.16	11 27 25.9	160.85
19	23 57 26.74	1 41 38.3	168.69	19	1 40 7.00	11 43 31.1	160.27
20	23 59 31.56	1 24 46.2	168.88	20	1 42 21.16	11 59 32.7	159.67
21	0 1 36.44	1 7 52.9	169.06	21	1 44 35.64	12 15 30.7	159.05
22	0 3 41.39	0 50 58.5	169.23	22	1 46 50.45	12 31 25.0	158.41
23	0 5 46.41	0 34 3.2	169.38	23	1 49 5.59	12 47 15.4	157.75
24	0 7 51.52	S. 0 17 6.9	169.52	24	1 51 21.06	N. 13 3 1.9	157.07
<i>SATURDAY 6.</i>				<i>MONDAY 8.</i>			
0	0 9 56.71	S. 0 0 9.8	169.64	0	1 53 36.88	N. 13 18 44.3	156.37
1	0 12 1.99	N. 0 16 48.1	169.75	1	1 55 53.04	13 34 22.5	155.65
2	0 14 7.37	0 33 46.6	169.84	2	1 58 9.55	13 49 56.4	154.91
3	0 16 12.86	0 50 45.6	169.92	3	2 0 26.40	14 5 25.9	154.16
4	0 18 18.45	1 7 45.2	169.99	4	2 2 43.62	14 20 50.9	153.38
5	0 20 24.16	1 24 45.1	170.03	5	2 5 1.19	14 36 11.1	152.58
6	0 22 29.99	1 41 45.3	170.07	6	2 7 19.13	14 51 26.6	151.76
7	0 24 35.94	1 58 45.7	170.08	7	2 9 37.43	15 6 37.2	150.93
8	0 26 42.02	2 15 46.2	170.09	8	2 11 56.11	15 21 42.8	150.07
9	0 28 48.24	2 32 46.7	170.07	9	2 14 15.15	15 36 43.2	149.19
10	0 30 54.61	2 49 47.1	170.04	10	2 16 34.57	15 51 38.4	148.30
11	0 33 1.12	3 6 47.4	170.00	11	2 18 54.37	16 6 28.1	147.38
12	0 35 7.79	3 23 47.4	169.94	12	2 21 14.55	16 21 12.4	146.44
13	0 37 14.62	3 40 47.0	169.86	13	2 23 35.12	16 35 51.0	145.48
14	0 39 21.61	3 57 46.2	169.77	14	2 25 56.07	16	144.50
15	0 41 28.77	4 14 44.8	169.66	15	2 28 17.41	17	143.50
16	0 43 36.11	4 31 42.8	169.54	16	2 30 39.15		142.49
17	0 45 43.63	4 48 40.0	169.40	17	2 33 1.27		141.45
18	0 47 51.34	5 5 36.4	169.24	18	2 35 23.80		140.39
19	0 49 59.25	5 22 31.8	169.06	19	2 37 46.72		
20	0 52 7.35	5 39 26.1	168.87	20	2 40 10.04		
21	0 54 15.66	5 56 19.4	168.67	21	2 42 33.76		
22	0 56 24.17	6 13 11.4	168.44	22	2 44 57.88		
23	0 58 32.91	6 30 2.1	168.20	23	2 47 22.40		
24	1 0 41.87	N. 6 46 51.3		24	2 49 47.7		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10".
<i>TUESDAY 9.</i>				<i>THURSDAY 11.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	2 49 47.33	N.19 10 9.8	133.60	0	4 53 1.60	N.27 3 18.4	55.68
1	2 52 12.66	19 23 31.4	132.40	1	4 55 42.77	27 8 52.5	53.72
2	2 54 38.40	19 36 45.8	131.18	2	4 58 24.10	27 14 14.8	51.75
3	2 57 4.55	19 49 52.9	129.93	3	5 1 5.58	27 19 25.3	49.78
4	2 59 31.09	20 2 52.5	128.67	4	5 3 47.19	27 24 24.0	47.80
5	3 1 58.05	20 15 44.5	127.39	5	5 6 28.93	27 29 10.7	45.81
6	3 4 25.40	20 28 28.8	126.08	6	5 9 10.78	27 33 45.6	43.82
7	3 6 53.16	20 41 5.3	124.76	7	5 11 52.74	27 38 8.5	41.82
8	3 9 21.33	20 53 33.9	123.42	8	5 14 34.79	27 42 19.5	39.82
9	3 11 49.90	21 5 54.4	122.06	9	5 17 16.92	27 46 18.4	37.82
10	3 14 18.86	21 18 6.7	120.67	10	5 19 59.12	27 50 5.3	35.82
11	3 16 48.23	21 30 10.8	119.27	11	5 22 41.38	27 53 40.2	33.82
12	3 19 17.99	21 42 6.4	117.85	12	5 25 23.69	27 57 3.0	31.78
13	3 21 48.16	21 53 53.5	116.41	13	5 28 6.04	28 0 13.7	29.76
14	3 24 18.71	22 5 32.0	114.95	14	5 30 48.40	28 3 12.2	27.74
15	3 26 49.67	22 17 1.7	113.48	15	5 33 30.78	28 5 58.7	25.71
16	3 29 21.01	22 28 22.6	111.98	16	5 36 13.15	28 8 33.1	23.71
17	3 31 52.73	22 39 34.5	110.46	17	5 38 55.51	28 10 55.3	21.69
18	3 34 24.85	22 50 37.2	108.93	18	5 41 37.85	28 13 5.5	19.67
19	3 36 57.34	23 1 30.8	107.38	19	5 44 20.15	28 15 3.5	17.65
20	3 39 30.21	23 12 15.0	105.81	20	5 47 2.40	28 16 49.4	15.64
21	3 42 3.45	23 22 49.9	104.22	21	5 49 44.59	28 18 23.2	13.62
22	3 44 37.06	23 33 15.2	102.61	22	5 52 26.71	28 19 45.0	11.61
23	3 47 11.03	N.23 43 30.9	100.99	23	5 55 8.74	N.28 20 54.7	9.62
<i>WEDNESDAY 10.</i>				<i>FRIDAY 12.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	3 49 45.37	N.23 53 36.8	99.35	0	5 57 50.68	N.28 21 52.3	7.60
1	3 52 20.07	24 3 32.9	97.69	1	6 0 32.51	28 22 37.9	5.60
2	3 54 55.11	24 13 19.1	96.02	2	6 3 14.21	28 23 11.5	3.61
3	3 57 30.51	24 22 55.2	94.33	3	6 5 55.78	28 23 33.1	1.62
4	4 0 6.24	24 32 21.1	92.62	4	6 8 37.21	28 23 42.8	0.37
5	4 2 42.31	24 41 36.9	90.90	5	6 11 18.48	28 23 40.6	2.35
6	4 5 18.70	24 50 42.3	89.16	6	6 13 59.58	28 23 26.5	4.32
7	4 7 55.41	24 59 37.2	87.41	7	6 16 40.50	28 23 0.6	6.28
8	4 10 32.45	25 8 21.7	85.65	8	6 19 21.23	28 22 22.9	8.24
9	4 13 9.79	25 16 55.6	83.87	9	6 22 1.76	28 21 33.5	10.19
10	4 15 47.43	25 25 18.8	82.07	10	6 24 42.08	28 20 32.3	12.14
11	4 18 25.36	25 33 31.2	80.26	11	6 27 22.17	28 19 19.5	14.07
12	4 21 3.58	25 41 32.8	78.44	12	6 30 2.03	28 17 55.1	15.99
13	4 23 42.08	25 49 23.4	76.61	13	6 32 41.64	28 16 19.1	17.91
14	4 26 20.86	25 57 3.1	74.76	14	6 35 20.99	28 14 31.7	19.81
15	4 28 59.90	26 4 31.6	72.90	15	6 38 0.08	28 12 32.8	21.71
16	4 31 39.19	26 11 49.0	71.03	16	6 40 38.88	28 10 22.6	23.59
17	4 34 18.73	26 18 55.2	69.14	17	6 43 17.40	28 8 1.0	25.46
18	4 36 58.50	26 25 50.0	67.25	18	6 45 55.63	28 5 28.3	27.34
19	4 39 38.50	26 32 33.5	65.34	19	6 48 33.54	28 2 44.3	29.17
20	4 42 18.72	26 39 5.6	63.43	20	6 51 11.13	27 59 49.3	31.01
21	4 44 59.15	26 45 26.2	61.51	21	6 53 48.40	27 56 43.2	32.82
22	4 47 39.78	26 51 35.2	59.57	22	6 56 25.34	27 53 26.2	34.65
23	4 50 20.60	26 57 32.6	57.63	23	6 59 1.93	27 49 58.3	36.45
24	4 53 1.60	N.27 3 18.4		24	7 1 38.17	N.27 46 19.6	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>SATURDAY 13.</i>				<i>MONDAY 15.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	7 1 38.17	N.27 46 19.6	38.24	0	8 57 50.27	N.21 50 34.3	104.84
1	7 4 14.05	27 42 30.2	40.01	1	9 0 3.41	21 40 5.3	105.81
2	7 6 49.55	27 38 30.1	41.77	2	9 2 16.06	21 29 30.4	106.76
3	7 9 24.68	27 34 19.5	43.51	3	9 4 28.21	21 18 49.8	107.70
4	7 11 59.42	27 29 58.5	45.24	4	9 6 39.87	21 8 3.7	108.62
5	7 14 33.77	27 25 27.1	46.95	5	9 8 51.04	20 57 12.0	109.52
6	7 17 7.72	27 20 45.3	48.65	6	9 11 1.73	20 46 14.9	110.41
7	7 19 41.26	27 15 53.4	50.34	7	9 13 11.93	20 35 12.4	111.28
8	7 22 14.38	27 10 51.4	52.01	8	9 15 21.65	20 24 4.7	112.14
9	7 24 47.09	27 5 39.4	53.66	9	9 17 30.89	20 12 51.9	112.98
10	7 27 19.36	27 0 17.4	55.30	10	9 19 39.66	20 1 34.1	113.80
11	7 29 51.21	26 54 45.6	56.92	11	9 21 47.95	19 50 11.3	114.61
12	7 32 22.61	26 49 4.1	58.52	12	9 23 55.78	19 38 43.6	115.41
13	7 34 53.56	26 43 13.0	60.11	13	9 26 3.14	19 27 11.2	116.19
14	7 37 24.07	26 37 12.3	61.68	14	9 28 10.04	19 15 34.1	116.95
15	7 39 54.12	26 31 2.2	63.24	15	9 30 16.48	19 3 52.3	117.70
16	7 42 23.70	26 24 42.8	64.78	16	9 32 22.47	18 52 6.1	118.44
17	7 44 52.83	26 18 14.1	66.30	17	9 34 28.00	18 40 15.5	119.16
18	7 47 21.48	26 11 36.3	67.80	18	9 36 33.09	18 28 20.5	119.87
19	7 49 49.66	26 4 49.5	69.29	19	9 38 37.73	18 16 21.3	120.56
20	7 52 17.36	25 57 53.8	70.76	20	9 40 41.94	18 4 17.9	121.24
21	7 54 44.58	25 50 49.2	72.21	21	9 42 45.70	17 52 10.5	121.91
22	7 57 11.32	25 43 35.9	73.65	22	9 44 49.04	17 39 59.0	122.56
23	7 59 37.57	N.25 36 14.0	75.07	23	9 46 51.95	N.17 27 43.6	123.20
<i>SUNDAY 14.</i>				<i>TUESDAY 16.</i>			
0	8 2 3.33	N.25 28 43.6	76.47	0	9 48 54.43	N.17 15 24.4	123.83
1	8 4 28.59	25 21 4.8	77.85	1	9 50 56.50	17 3 1.4	124.44
2	8 6 53.36	25 13 17.7	79.22	2	9 52 58.15	16 50 34.8	125.04
3	8 9 17.63	25 5 22.4	80.56	3	9 54 59.39	16 38 4.5	125.63
4	8 11 41.40	24 57 19.0	81.90	4	9 57 0.23	16 25 30.8	126.20
5	8 14 4.66	24 49 7.6	83.21	5	9 59 0.66	16 12 53.6	126.76
6	8 16 27.42	24 40 48.4	84.50	6	10 1 0.70	16 0 13.0	127.31
7	8 18 49.68	24 32 21.4	85.78	7	10 3 0.35	15 47 29.2	127.84
8	8 21 11.43	24 23 46.7	87.04	8	10 4 59.60	15 34 42.1	128.37
9	8 23 32.67	24 15 4.4	88.29	9	10 6 58.48	15 21 51.9	128.88
10	8 25 53.40	24 6 14.7	89.51	10	10 8 56.97	15 8 58.7	129.38
11	8 28 13.62	23 57 17.6	90.72	11	10 10 55.09	14 56 2.4	129.86
12	8 30 33.34	23 48 13.3	91.91	12	10 12 52.84	14 43 3.2	130.34
13	8 32 52.54	23 39 1.8	93.08	13	10 14 50.23	14 30 1.2	130.80
14	8 35 11.24	23 29 43.3	94.24	14	10 16 47.26	14 16 56.4	131.25
15	8 37 29.42	23 20 17.9	95.37	15	10 18 43.93	13 8.8	131.70
16	8 39 47.09	23 10 45.7	96.50	16	10 20 40.26	12.7	132.13
17	8 42 4.26	23 1 6.7	97.60	17	10 22 36	5.9	132.55
18	8 44 20.92	22 51 21.1	98.68	18	10 24 ?	0.7	132.9
19	8 46 37.07	22 41 29.0	99.75	19	10 26 :	0	133.2
20	8 48 52.72	22 31 30.5	100.81	20	10 28	9	133
21	8 51 7.86	22 21 25.7	101.84	21	10 30	1	134
22	8 53 22.50	22 11 14.6	102.86	22	10 32	1	134
23	8 55 36.63	22 0 57.5	103.86	23	10 34	1	134
24	8 57 50.27	N.21 50 34.3		24	10 :		

MEAN TIME.							
THE MOON'S RIGHT ASCENSION AND DECLINATION.							
Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 th .
<i>WEDNESDAY 17.</i>				<i>FRIDAY 19.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	10 35 58.87	N. 12 3 49.9	135.18	0	12 2 33.11	N. 0 52 16.6	141.78
1	10 37 52.28	11 50 18.8	135.51	1	12 4 17.91	0 38 5.9	141.74
2	10 39 45.38	11 36 45.8	135.84	2	12 6 2.65	0 23 55.5	141.69
3	10 41 38.19	11 23 10.7	136.16	3	12 7 47.34	N. 0 9 45.3	141.64
4	10 43 30.72	11 9 33.8	136.46	4	12 9 31.98	S. 0 4 24.5	141.58
5	10 45 22.95	10 55 55.0	136.76	5	12 11 16.58	0 18 34.0	141.51
6	10 47 14.91	10 42 14.5	137.05	6	12 13 1.15	0 32 43.0	141.44
7	10 49 6.60	10 28 32.2	137.32	7	12 14 45.68	0 46 51.7	141.36
8	10 50 58.01	10 14 48.3	137.59	8	12 16 30.19	1 0 59.8	141.27
9	10 52 49.17	10 1 2.7	137.85	9	12 18 14.67	1 15 7.5	141.18
10	10 54 40.06	9 47 15.6	138.10	10	12 19 59.14	1 29 14.5	141.08
11	10 56 30.70	9 33 27.0	138.34	11	12 21 43.60	1 43 21.0	140.98
12	10 58 21.09	9 19 36.9	138.58	12	12 23 28.05	1 57 26.9	140.86
13	11 0 11.24	9 5 45.4	138.80	13	12 25 12.50	2 11 32.1	140.75
14	11 2 1.15	8 51 52.6	139.02	14	12 26 56.95	2 25 36.6	140.62
15	11 3 50.83	8 37 58.5	139.22	15	12 28 41.41	2 39 40.3	140.49
16	11 5 40.28	8 24 3.1	139.42	16	12 30 25.88	2 53 43.3	140.36
17	11 7 29.51	8 10 6.6	139.61	17	12 32 10.37	3 7 45.4	140.21
18	11 9 18.52	7 56 8.9	139.80	18	12 33 54.88	3 21 46.7	140.07
19	11 11 7.32	7 42 10.1	139.97	19	12 35 39.41	3 35 47.1	139.91
20	11 12 55.91	7 28 10.3	140.14	20	12 37 23.98	3 49 46.5	139.75
21	11 14 44.30	7 14 9.5	140.29	21	12 39 8.58	4 3 45.0	139.58
22	11 16 32.49	7 0 7.7	140.44	22	12 40 53.23	4 17 42.5	139.41
23	11 18 20.49	N. 6 46 5.0	140.59	23	12 42 37.92	S. 4 31 39.0	139.23
<i>THURSDAY 18.</i>				<i>SATURDAY 20.</i>			
	<i>h m s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>° ' "</i>	<i>"</i>
0	11 20 8.30	N. 6 32 1.5	140.72	0	12 44 22.66	S. 4 45 34.3	139.04
1	11 21 55.93	6 17 57.2	140.85	1	12 46 7.46	4 59 28.5	138.85
2	11 23 43.39	6 3 52.1	140.97	2	12 47 52.31	5 13 21.6	138.65
3	11 25 30.67	5 49 46.3	141.08	3	12 49 37.23	5 27 13.5	138.44
4	11 27 17.79	5 35 39.8	141.18	4	12 51 22.21	5 41 4.1	138.23
5	11 29 4.75	5 21 32.7	141.28	5	12 53 7.27	5 54 53.5	138.01
6	11 30 51.55	5 7 25.0	141.37	6	12 54 52.41	6 8 41.5	137.78
7	11 32 38.21	4 53 16.8	141.45	7	12 56 37.63	6 22 28.2	137.55
8	11 34 24.71	4 39 8.1	141.53	8	12 58 22.94	6 36 13.5	137.31
9	11 36 11.08	4 24 59.0	141.59	9	13 0 8.33	6 49 57.4	137.06
10	11 37 57.31	4 10 49.5	141.65	10	13 1 53.83	7 3 39.7	136.81
11	11 39 43.40	3 56 39.5	141.70	11	13 3 39.43	7 17 20.6	136.55
12	11 41 29.38	3 42 29.3	141.75	12	13 5 25.13	7 30 59.9	136.28
13	11 43 15.23	3 28 18.8	141.79	13	13 7 10.94	7 44 37.6	136.01
14	11 45 0.97	3 14 8.1	141.82	14	13 8 56.87	7 58 13.7	135.73
15	11 46 46.60	2 59 57.1	141.85	15	13 10 42.92	8 11 48.0	135.44
16	11 48 32.12	2 45 46.0	141.87	16	13 12 29.09	8 25 20.7	135.15
17	11 50 17.55	2 31 34.8	141.88	17	13 14 15.38	8 38 51.6	134.85
18	11 52 2.87	2 17 23.6	141.88	18	13 16 1.82	8 52 20.7	134.54
19	11 53 48.11	2 3 12.2	141.88	19	13 17 48.39	9 5 47.9	134.23
20	11 55 33.26	1 49 0.9	141.88	20	13 19 35.10	9 19 13.3	133.91
21	11 57 18.33	1 34 49.7	141.86	21	13 21 21.96	9 32 36.8	133.58
22	11 59 3.33	1 20 38.5	141.84	22	13 23 8.97	9 45 58.2	133.24
23	12 0 48.25	1 6 27.5	141.81	23	13 24 56.13	9 59 17.7	132.90
24	12 2 33.11	N. 0 52 16.6		24	13 26 43.45	S. 10 12 35.1	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

ht Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
SUNDAY 21.						
m s	° ' "	"		h m s	° ' "	"
26 43.45	S. 10 12 35.1	132.55	0	14 57 3.77	S. 19 54 34.7	105.97
28 30.94	10 25 50.4	132.20	1	14 59 3.81	20 5 10.5	105.18
30 18.59	10 39 3.6	131.83	2	15 1 4.19	20 15 41.6	104.38
32 6.42	10 52 14.6	131.46	3	15 3 4.91	20 26 7.8	103.57
33 54.43	11 5 23.3	131.08	4	15 5 5.98	20 36 29.3	102.75
35 42.62	11 18 29.8	130.69	5	15 7 7.41	20 46 45.8	101.92
37 31.00	11 31 34.0	130.30	6	15 9 9.18	20 56 57.3	101.08
39 19.56	11 44 35.8	129.90	7	15 11 11.30	21 7 3.8	100.23
41 8.33	11 57 35.2	129.49	8	15 13 13.79	21 17 5.1	99.36
42 57.29	12 10 32.1	129.07	9	15 15 16.62	21 27 1.3	98.49
44 46.45	12 23 26.5	128.64	10	15 17 19.82	21 36 52.2	97.60
46 35.82	12 36 18.3	128.21	11	15 19 23.38	21 46 37.9	96.70
48 25.40	12 49 7.6	127.77	12	15 21 27.30	21 56 18.1	95.80
50 15.20	13 1 54.2	127.32	13	15 23 31.59	22 5 52.9	94.88
52 5.21	13 14 38.1	126.86	14	15 25 36.23	22 15 22.2	93.95
53 55.45	13 27 19.2	126.39	15	15 27 41.25	22 24 45.9	93.00
55 45.91	13 39 57.6	125.92	16	15 29 46.63	22 34 3.9	92.05
57 36.61	13 52 33.1	125.44	17	15 31 52.38	22 43 16.2	91.08
59 27.55	14 5 5.7	124.95	18	15 33 58.50	22 52 22.7	90.10
1 18.72	14 17 35.4	124.45	19	15 36 4.99	23 1 23.3	89.11
3 10.14	14 30 2.1	123.94	20	15 38 11.85	23 10 18.0	88.11
5 1.80	14 42 25.7	123.42	21	15 40 19.09	23 19 6.6	87.10
6 53.72	14 54 46.3	122.90	22	15 42 26.69	23 27 49.2	86.07
8 45.90	S. 15 7 3.7	122.37	23	15 44 34.66	S. 23 36 25.6	85.03
MONDAY 22.						
10 38.33	S. 15 19 17.9	121.83	0	15 46 43.01	S. 23 44 55.8	83.98
12 31.03	15 31 28.9	121.28	1	15 48 51.73	23 53 19.7	82.92
14 23.99	15 43 36.5	120.72	2	15 51 0.83	24 1 37.2	81.84
16 17.22	15 55 40.8	120.15	3	15 53 10.30	24 9 48.3	80.76
18 10.73	16 7 41.7	119.57	4	15 55 20.14	24 17 52.8	79.66
20 4.52	16 19 39.2	118.98	5	15 57 30.35	24 25 50.8	78.55
21 58.58	16 31 33.1	118.39	6	15 59 40.93	24 33 42.1	77.43
23 52.94	16 43 23.4	117.78	7	16 1 51.89	24 41 26.7	76.30
25 47.58	16 55 10.1	117.17	8	16 4 3.21	24 49 4.5	75.16
27 42.51	17 6 53.0	116.54	9	16 6 14.91	24 56 35.5	74.00
29 37.74	17 18 32.3	115.91	10	16 8 26.97	25 3 59.5	72.83
31 33.27	17 30 7.7	115.26	11	16 10 39.40	25 11 16.5	71.66
33 29.10	17 41 39.3	114.61	12	16 12 52.19	25 18 26.4	70.47
35 25.23	17 53 6.9	113.94	13	16 15 5.35	25 25 29.2	69.26
37 21.68	18 4 30.6	113.27	14	16 17 18.87	25 32 24.8	68.05
39 18.43	18 15 50.2	112.58	15	16 19 32.75	25 39 13.1	66.82
41 15.50	18 27 5.7	111.89	16	16 21 46.99	25 45 54.0	65.59
43 12.89	18 38 17.1	111.19	17	16 24 1.59	25 52 27.6	64.34
45 10.60	18 49 24.2	110.47	18	16 26 16.54	25 58 53.6	63.08
47 8.64	19 0 27.0	109.75	19	16 28 31.84	26 5 12.0	61.80
49 7.00	19 11 25.5	109.01	20	16 30 47.49	26 11 22.9	60.52
51 5.69	19 22 19.6	108.27	21	16 33 3.49	26 17 26.0	59.23
53 4.72	19 33 9.2	107.51	22	16 35 19.83	26 23 21.4	57.92
55 4.08	19 43 54.2	106.75	23	16 37 36.51	26 29 8.9	56.60
57 3.77	S. 19 54 34.7		24	16 39 53.53	S. 26 34 48.5	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^o .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^o .
<i>THURSDAY 25.</i>				<i>SATURDAY 27.</i>			
0	16 39 53.53	S. 26 34 48.5	55.28	0	18 34 31.69	S. 28 13 11.4	18.45
1	16 42 10.89	26 40 20.2	53.94	1	18 36 58.65	28 11 20.7	20.10
2	16 44 28.57	26 45 43.8	52.59	2	18 39 25.63	28 9 20.1	21.76
3	16 46 46.59	26 50 59.3	51.22	3	18 41 52.63	28 7 9.5	23.41
4	16 49 4.93	26 56 6.6	49.85	4	18 44 19.64	28 4 49.1	25.07
5	16 51 23.59	27 1 5.8	48.47	5	18 46 46.65	28 2 18.6	26.72
6	16 53 42.56	27 5 56.6	47.08	6	18 49 13.65	27 59 38.3	28.38
7	16 56 1.85	27 10 39.0	45.67	7	18 51 40.64	27 56 48.0	30.03
8	16 58 21.44	27 15 13.1	44.26	8	18 54 7.61	27 53 47.9	31.68
9	17 0 41.34	27 19 38.7	42.84	9	18 56 34.56	27 50 37.8	33.33
10	17 3 1.53	27 23 55.7	41.41	10	18 59 1.46	27 47 17.8	34.98
11	17 5 22.02	27 28 4.1	39.96	11	19 1 28.33	27 43 48.0	36.62
12	17 7 42.79	27 32 3.9	38.51	12	19 3 55.14	27 40 8.2	38.27
13	17 10 3.86	27 35 55.0	37.05	13	19 6 21.90	27 36 18.6	39.91
14	17 12 25.20	27 39 37.3	35.58	14	19 8 48.58	27 32 19.2	41.54
15	17 14 46.81	27 43 10.7	34.10	15	19 11 15.20	27 28 9.9	43.18
16	17 17 8.69	27 46 35.3	32.61	16	19 13 41.73	27 23 50.9	44.81
17	17 19 30.84	27 49 51.0	31.11	17	19 16 8.18	27 19 22.0	46.43
18	17 21 53.24	27 52 57.6	29.60	18	19 18 34.53	27 14 43.4	48.05
19	17 24 15.89	27 55 55.2	28.09	19	19 21 0.78	27 9 55.1	49.67
20	17 26 38.79	27 58 43.8	26.57	20	19 23 26.93	27 4 57.1	51.29
21	17 29 1.92	28 1 23.2	25.04	21	19 25 52.96	26 59 49.3	52.89
22	17 31 25.29	28 3 53.4	23.50	22	19 28 18.86	26 54 32.0	54.50
23	17 33 48.88	S. 28 6 14.4	21.95	23	19 30 44.64	S. 26 49 5.0	56.10
<i>FRIDAY 26.</i>				<i>SUNDAY 28.</i>			
0	17 36 12.69	S. 28 8 26.1	20.40	0	19 33 10.29	S. 26 43 28.4	57.69
1	17 38 36.72	28 10 28.5	18.84	1	19 35 35.79	26 37 42.3	59.28
2	17 41 0.95	28 12 21.5	17.27	2	19 38 1.15	26 31 46.6	60.86
3	17 43 25.38	28 14 5.1	15.70	3	19 40 26.36	26 25 41.5	62.43
4	17 45 50.00	28 15 39.3	14.11	4	19 42 51.41	26 19 26.9	64.00
5	17 48 14.81	28 17 4.0	12.53	5	19 45 16.29	26 13 2.9	65.56
6	17 50 39.80	28 18 19.2	10.94	6	19 47 41.00	26 6 29.6	67.11
7	17 53 4.96	28 19 24.8	9.34	7	19 50 5.54	25 59 46.9	68.65
8	17 55 30.28	28 20 20.8	7.73	8	19 52 29.89	25 52 55.0	70.19
9	17 57 55.76	28 21 7.2	6.13	9	19 54 54.06	25 45 53.8	71.72
10	18 0 21.39	28 21 44.0	4.51	10	19 57 18.03	25 38 43.5	73.24
11	18 2 47.16	28 22 11.0	2.89	11	19 59 41.81	25 31 24.1	74.76
12	18 5 13.07	28 22 28.4	1.27	12	20 2 5.39	25 23 55.5	76.26
13	18 7 39.11	28 22 36.0	0.36	13	20 4 28.76	25 16 17.9	77.76
14	18 10 5.26	28 22 33.9	1.99	14	20 6 51.93	25 8 31.4	79.25
15	18 12 31.53	28 22 22.0	3.62	15	20 9 14.88	25 0 35.9	80.72
16	18 14 57.91	28 22 0.2	5.26	16	20 11 37.61	24 52 31.6	82.19
17	18 17 24.37	28 21 28.7	6.90	17	20 14 0.12	24 44 18.4	83.65
18	18 19 50.93	28 20 47.3	8.54	18	20 16 22.41	24 35 56.5	85.10
19	18 22 17.57	28 19 56.0	10.19	19	20 18 44.46	24 27 25.9	86.54
20	18 24 44.28	28 18 54.9	11.84	20	20 21 6.28	24 18 46.7	87.96
21	18 27 11.06	28 17 43.9	13.49	21	20 23 27.87	24 9 58.9	89.38
22	18 29 37.89	28 16 23.0	15.14	22	20 25 49.21	24 1 2.6	90.79
23	18 32 4.77	28 14 52.1	16.79	23	20 28 10.32	23 51 57.9	92.19
24	18 34 31.69	S. 28 13 11.4		24	20 30 31.17	S. 23 42 44.8	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .	Hour.	Right Ascension.	Declination.	Diff. Dec. for 10 ^m .
<i>MONDAY 29.</i>				<i>WEDNESDAY 31.</i>			
0	h m s	° ' "	"	0	h m s	° ' "	"
0	20 30 31.17	S. 23 42 44.8	93.57	0	22 18 4.16	S. 13 59 30.0	145.55
1	20 32 51.78	23 33 23.4	94.94	1	22 20 12.49	13 44 56.7	146.30
2	20 35 12.14	23 23 53.7	96.31	2	22 22 20.62	13 30 18.9	147.04
3	20 37 32.24	23 14 15.9	97.66	3	22 24 28.53	13 15 36.6	147.77
4	20 39 52.09	23 4 29.9	99.00	4	22 26 36.25	13 0 50.0	148.49
5	20 42 11.68	22 54 35.9	100.33	5	22 28 43.76	12 45 59.1	149.19
6	20 44 31.01	22 44 33.9	101.65	6	22 30 51.07	12 31 3.9	149.88
7	20 46 50.08	22 34 24.0	102.96	7	22 32 58.20	12 16 4.6	150.55
8	20 49 8.88	22 24 6.2	104.26	8	22 35 5.13	12 1 1.3	151.21
9	20 51 27.43	22 13 40.7	105.54	9	22 37 11.88	11 45 54.0	151.86
10	20 53 45.70	22 3 7.4	106.81	10	22 39 18.45	11 30 42.8	152.50
11	20 56 3.71	21 52 26.5	108.07	11	22 41 24.85	11 15 27.9	153.12
12	20 58 21.45	21 41 38.1	109.32	12	22 43 31.07	11 0 9.2	153.72
13	21 0 38.92	21 30 42.2	110.56	13	22 45 37.12	10 44 46.9	154.31
14	21 2 56.12	21 19 38.8	111.78	14	22 47 43.02	10 29 21.0	154.89
15	21 5 13.05	21 8 28.1	112.98	15	22 49 48.75	10 13 51.7	155.46
16	21 7 29.70	20 57 10.2	114.19	16	22 51 54.33	9 58 18.9	156.01
17	21 9 46.09	20 45 45.0	115.38	17	22 53 59.75	9 42 42.9	156.55
18	21 12 2.20	20 34 12.8	116.55	18	22 56 5.03	9 27 3.6	157.07
19	21 14 18.05	20 22 33.5	117.71	19	22 58 10.17	9 11 21.2	157.59
20	21 16 33.62	20 10 47.2	118.85	20	23 0 15.17	8 55 35.6	158.08
21	21 18 48.92	19 58 54.1	119.99	21	23 2 20.04	8 39 47.1	158.57
22	21 21 3.94	19 46 54.2	121.11	22	23 4 24.78	8 23 55.7	159.04
23	21 23 18.70	S. 19 34 47.5	122.22	23	23 6 29.39	S. 8 8 1.5	159.50
<i>TUESDAY 30.</i>				<i>THURSDAY, JAN. 1, 1857.</i>			
0	21 25 33.19	S. 19 22 34.2	123.31	0	23 8 33.89	S. 7 52 4.5	
1	21 27 47.41	19 10 14.4	124.39				
2	21 30 1.37	18 57 48.0	125.46				
3	21 32 15.05	18 45 15.3	126.51				
4	21 34 28.48	18 32 36.2	127.55				
5	21 36 41.64	18 19 50.9	128.58				
6	21 38 54.53	18 6 59.4	129.59				
7	21 41 7.17	17 54 1.8	130.60				
8	21 43 19.55	17 40 58.3	131.58				
9	21 45 31.67	17 27 48.8	132.56				
10	21 47 43.54	17 14 33.4	133.52				
11	21 49 55.15	17 1 12.3	134.47				
12	21 52 6.51	16 47 45.5	135.40				
13	21 54 17.62	16 34 13.1	136.32				
14	21 56 28.49	16 20 35.1	137.23				
15	21 58 39.11	16 6 51.8	138.12				
16	22 0 49.50	15 53 3.0	139.00				
17	22 2 59.64	15 39 9.0	139.87				
18	22 5 9.54	15 25 9.8	140.72				
19	22 7 19.21	15 11 5.5	141.56				
20	22 9 28.65	14 56 56.1	142.38				
21	22 11 37.86	14 42 41.8	143.19				
22	22 13 46.85	14 28 22.6	143.99				
23	22 15 55.62	14 13 58.7	144.78				
24	22 18 4.16	S. 13 59 30.0					

PHASES OF THE MOON.

- | | d | h | m |
|-----------------|---|----|---------|
| ☾ First Quarter | - | 4 | 15 26.1 |
| ☾ Full Moon | - | 11 | |
| ☾ Last Quarter | - | 18 | |
| ● New Moon | - | 21 | |

- ☾ Perigee - -
☾ Apogee - -

MEAN TIME.																	
LUNAR DISTANCES.																	
Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .						
		P.L. of diff.			P.L. of diff.			P.L. of diff.			P.L. of diff.						
		o	i	"	o	i	"	o	i	"	o	i	"				
1	SUN W.	44	55	50	3029	46	25	27	3019	47	55	16	3008	49	25	19	2998
	Fomalhaut E.	39	50	21	3227	38	24	44	3261	36	59	47	3301	35	35	36	3347
	α Pegasi E.	61	20	43	3068	59	51	54	3073	58	23	12	3079	56	54	37	3087
	Jupiter E.	65	4	0	2663	63	26	31	2654	61	48	50	2646	60	10	58	2637
2	α Arietis E.	102	4	15	2699	100	27	34	2689	98	50	40	2680	97	13	34	2672
	SUN W.	56	58	47	2946	58	30	8	2935	60	1	43	2924	61	33	31	2913
	Venus W.	22	59	12	3048	24	28	25	3033	25	57	57	3018	27	27	47	3005
	α Pegasi E.	49	34	49	3155	48	7	46	3176	46	41	8	3201	45	15	0	3229
3	Jupiter E.	51	58	34	2592	50	19	28	2583	48	40	9	2574	47	0	38	2564
	α Arietis E.	89	4	58	2625	87	26	37	2615	85	48	3	2607	84	9	17	2597
	SUN W.	69	15	57	2859	70	49	8	2849	72	22	33	2838	73	56	12	2827
	Venus W.	35	1	6	2939	36	32	35	2927	38	4	19	2916	39	36	18	2902
4	Mars W.	23	56	3	2813	25	30	14	2798	27	4	45	2782	28	39	37	2768
	Jupiter E.	38	39	43	2516	36	58	52	2506	35	17	47	2496	33	36	28	2486
	α Arietis E.	75	52	15	2551	74	12	13	2541	72	31	57	2532	70	51	29	2523
	Aldebaran E.	106	28	32	2572	104	48	58	2561	103	9	9	2549	101	29	4	2539
5	SUN W.	81	48	4	2771	83	23	10	2760	84	58	31	2749	86	34	6	2737
	Venus W.	47	20	11	2842	48	53	44	2831	50	27	32	2818	52	1	36	2806
	α Aquilæ W.	46	27	38	2701	47	33	34	2688	48	41	17	2675	49	50	42	2663
	Mars W.	36	38	31	2701	38	15	10	2688	39	52	6	2675	41	29	19	2663
6	α Arietis E.	62	25	59	2479	60	44	17	2470	59	2	22	2462	57	20	16	2454
	Aldebaran E.	93	4	58	2485	91	23	24	2475	89	41	35	2465	87	59	32	2454
	SUN W.	94	35	46	2681	96	12	51	2671	97	50	10	2660	99	27	43	2649
	Venus W.	59	55	50	2747	61	31	27	2736	63	7	19	2725	64	43	26	2713
7	α Aquilæ W.	55	59	54	2650	57	17	34	2638	58	36	21	2625	59	56	10	2613
	Mars W.	49	39	29	2604	51	18	19	2592	52	57	25	2581	54	36	46	2569
	α Arietis E.	48	47	0	2419	47	3	52	2413	45	20	36	2408	43	37	12	2403
	Aldebaran E.	79	25	42	2405	77	42	14	2395	75	58	32	2387	74	14	38	2378
8	SUN W.	107	39	3	2598	109	18	1	2588	110	57	12	2579	112	36	36	2570
	Venus W.	72	47	46	2658	74	25	22	2648	76	3	12	2638	77	41	15	2628
	α Aquilæ W.	66	48	51	2664	68	13	44	2630	69	39	18	2619	71	5	29	2609
	Mars W.	62	57	21	2516	64	38	12	2505	66	19	18	2496	68	0	37	2486
9	Fomalhaut W.	35	51	57	2913	37	23	59	2853	38	57	18	2799	40	31	47	2751
	Aldebaran E.	65	32	0	2337	63	46	54	2330	62	1	38	2323	60	16	12	2317
	Saturn E.	100	27	34	2263	98	40	40	2253	96	53	31	2245	95	6	10	2235
	SUN W.	120	56	36	2529	122	37	9	2522	124	17	52	2515	125	58	45	2509
10	Venus W.	85	54	48	2582	87	34	7	2574	89	13	37	2566	90	53	18	2559
	α Aquilæ W.	78	24	23	3054	79	53	29	3036	81	22	57	3021	82	52	43	3008
	Mars W.	76	30	31	2442	78	13	6	2434	79	55	53	2426	81	38	51	2419
	Fomalhaut W.	48	38	17	2572	50	17	51	2544	51	58	3	2520	53	38	49	2498
11	Aldebaran E.	51	27	10	2296	49	41	5	2295	47	54	58	2294	46	8	50	2295
	Saturn E.	86	6	5	2194	84	17	28	2186	82	28	40	2180	80	39	42	2173
	Pollux E.	94	35	43	2194	92	47	7	2187	90	58	20	2180	89	9	22	2173
	Venus W.	99	14	6	2528	100	54	40	2524	102	35	20	2520	104	16	6	2515
12	Mars W.	90	16	1	2389	91	59	52	2384	93	43	49	2380	95	27	52	2377
	Fomalhaut W.	62	9	35	2412	63	52	52	2400	65	36	27	2388	67	20	19	2378

MEAN TIME.
LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ′ "		° ′ "		° ′ "		° ′ "	
1	SUN W.	50 55 34	2987	52 26 3	2977	53 56 44	2966	55 27 39	2956
	Fomalhaut E.	34 12 19	3402	32 50 5	3466	31 29 3	3542	30 9 25	3632
	α Pegasi E.	55 26 11	3097	53 57 58	3108	52 29 58	3121	51 2 14	3137
	Jupiter E.	58 32 53	2629	56 54 37	2619	55 16 8	2610	53 37 27	2601
	α Arietis E.	95 36 16	2662	93 58 45	2653	92 21 2	2643	90 43 6	2635
2	SUN W.	63 5 33	2903	64 37 48	2892	66 10 17	2881	67 43 0	2870
	Venus W.	28 57 54	2992	30 28 17	2978	31 58 57	2965	33 29 54	2953
	α Pegasi E.	43 49 25	3262	42 24 29	3300	41 0 17	3343	39 36 55	3393
	Jupiter E.	45 20 53	2555	43 40 56	2545	42 0 45	2535	40 20 21	2525
	α Arietis E.	82 30 18	2588	80 51 7	2578	79 11 42	2569	77 32 5	2560
3	SUN W.	75 30 5	2815	77 4 13	2804	78 38 36	2794	80 13 12	2782
	Venus W.	41 8 34	2890	42 41 5	2879	44 13 51	2866	45 46 53	2854
	Mars W.	30 14 47	2753	31 50 17	2740	33 26 4	2726	35 2 9	2713
	Jupiter E.	31 54 55	2476	30 13 8	2465	28 31 6	2456	26 48 51	2446
	α Arietis E.	69 10 48	2514	67 29 55	2505	65 48 49	2496	64 7 30	2487
	Aldebaran E.	99 48 45	2528	98 8 10	2517	96 27 21	2507	94 46 17	2496
4	SUN W.	88 9 57	2726	89 46 2	2715	91 22 22	2704	92 58 57	2693
	Venus W.	53 35 56	2795	55 10 31	2782	56 45 22	2771	58 20 28	2759
	α Aquilæ W.	51 1 43	3948	52 14 14	3865	53 28 9	3788	54 43 24	3716
	Mars W.	43 6 49	2651	44 44 35	2639	46 22 37	2627	48 0 55	2615
	α Arietis E.	55 37 58	2446	53 55 29	2438	52 12 49	2431	50 29 59	2425
	Aldebaran E.	86 17 14	2444	84 34 42	2434	82 51 56	2424	81 8 56	2414
5	SUN W.	101 5 31	2639	102 43 33	2629	104 21 49	2618	106 0 20	2609
	Venus W.	66 19 48	2702	67 56 26	2691	69 33 18	2680	71 10 25	2669
	α Aquilæ W.	61 16 58	3429	62 38 42	3384	64 1 17	3341	65 24 41	3301
	Mars W.	56 16 23	2558	57 56 15	2548	59 36 22	2537	61 16 44	2526
	α Arietis E.	41 53 42	2400	40 10 8	2398	38 26 30	2397	36 42 51	2398
	Aldebaran E.	72 30 31	2369	70 46 11	2360	69 1 39	2352	67 16 55	2344
6	SUN W.	114 16 12	2561	115 56 0	2552	117 36 1	2544	119 16 13	2536
	Venus W.	79 19 32	2618	80 58 2	2609	82 36 45	2600	84 15 40	2591
	α Aquilæ W.	72 32 15	3142	73 59 34	3117	75 27 23	3094	76 55 40	3073
	Mars W.	69 42 10	2477	71 23 56	2467	73 5 55	2458	74 48 7	2450
	Fomalhaut W.	42 7 19	2708	43 43 49	2668	45 21 12	2632	46 59 23	2601
	Aldebaran E.	58 30 38	2312	56 44 56	2307	54 59 6	2303	53 13 11	2299
	Saturn E.	93 18 34	2226	91 30 46	2218	89 42 45	2209	87 54 31	2201
7	SUN W.	127 39 46	2502	129 20 56	2497	131 2 13	2492	132 43 37	2489
	Venus W.	92 33 10	2552	94 13 11	2546	95	0	97 33 39	2533
	α Aquilæ W.	84 22 46	2996	85 53 4	2986	87	3	88 54 15	2972
	Mars W.	83 21 59	2412	85 5 16	2405	85	0	88 32 18	2394
	Fomalhaut W.	55 20 5	2477	57 1 51	2459		2	60 26	236
	Aldebaran E.	44 22 43	2296	42 36 38	2300			39	12
	Saturn E.	78 50 34	2167	77 1 16	216			73	
	Pollux E.	87 20 14	2167	85 30 57	216			11	
8	Venus W.	105 56 58	2512	107 37 54	2502			0	
	Mars W.	97 12 0	2373	98 56 13	2362			2	
	Fomalhaut W.	69 4 25	2369	70 48 44	2358			4	

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Day of the Month.	Star's Name and Position.	Noon.			P.L. of diff.	III ^h .			P.L. of diff.	VI ^h .			P.L. of diff.	IX ^h .		
		°	'	"		°	'	"		°	'	"		°	'	"
8	α Pegasi W.	42	39	47	2850	44	13	10	2801	45	47	37	2756	47	23	3
	Jupiter W.	31	36	57	2158	33	26	28	2154	35	16	5	2151	37	5	47
	Saturn E.	71	32	35	2147	69	42	47	2143	67	52	54	2140	66	2	55
	Pollux E.	80	2	13	2145	78	12	23	2141	76	22	26	2137	74	32	24
9	Mars W.	104	9	8	2366	105	53	31	2367	107	37	53	2367	109	22	15
	Fomalhaut W.	76	2	40	2345	77	47	34	2341	79	32	33	2339	81	17	35
	α Pegasi W.	55	31	28	2577	57	10	54	2559	58	50	45	2542	60	31	0
	Jupiter W.	46	15	22	2138	48	5	23	2138	49	55	25	2138	51	45	26
	Saturn E.	56	52	18	2132	55	2	8	2133	53	12	0	2135	51	21	54
	Pollux E.	65	21	9	2124	63	30	47	2124	61	40	25	2124	59	50	3
10	Fomalhaut W.	90	2	44	2347	91	47	35	2351	93	32	20	2357	95	16	57
	α Pegasi W.	68	56	15	2485	70	37	50	2482	72	19	29	2480	74	1	11
	Jupiter W.	60	54	55	2152	62	44	35	2157	64	34	8	2161	66	23	34
	α Arietis W.	25	22	44	2362	27	7	13	2340	28	52	14	2323	30	37	40
	Saturn E.	42	12	49	2163	40	23	26	2171	38	34	15	2180	36	45	18
	Pollux E.	50	38	52	2139	48	48	52	2143	46	58	58	2148	45	9	12
	Regulus E.	87	21	46	2141	85	31	50	2147	83	42	2	2151	81	52	20
	α Pegasi W.	82	29	21	2495	84	10	42	2502	85	51	53	2509	87	32	54
11	Jupiter W.	75	28	19	2203	77	16	42	2212	79	4	51	2222	80	52	46
	α Arietis W.	39	28	4	2288	41	14	21	2289	43	0	36	2293	44	46	45
	Saturn E.	27	45	14	2269	25	58	29	2293	24	12	19	2320	22	26	49
	Pollux E.	36	2	49	2191	34	14	8	2201	32	25	42	2211	30	37	30
	Regulus E.	72	46	16	2193	70	57	38	2202	69	9	13	2211	67	21	2
	α Pegasi W.	95	54	20	2579	97	33	44	2595	99	12	46	2610	100	51	27
12	Jupiter W.	89	48	22	2289	91	34	37	2302	93	20	33	2316	95	6	9
	α Arietis W.	53	35	27	2335	55	20	36	2345	57	5	30	2355	58	50	9
	Aldebaran W.	24	3	21	2642	25	41	19	2610	27	20	1	2586	28	59	15
	Regulus E.	58	24	9	2279	56	37	39	2293	54	51	29	2306	53	5	38
	Jupiter W.	103	49	0	2404	105	32	29	2419	107	15	36	2436	108	58	20
13	α Arietis W.	67	29	1	2432	69	11	50	2446	70	54	19	2461	72	36	27
	Aldebaran W.	37	19	7	2548	38	59	14	2551	40	39	16	2556	42	19	11
	Regulus E.	44	21	45	2396	42	38	5	2413	40	54	49	2430	39	11	57
	Spica γ E.	98	20	4	2384	96	36	7	2400	94	52	32	2416	93	9	20
	α Arietis W.	81	1	39	2556	82	41	34	2573	84	21	6	2589	86	0	16
14	Aldebaran W.	50	35	46	2615	52	14	21	2627	53	52	39	2640	55	30	40
	Saturn W.	16	8	53	2751	17	44	25	2725	19	20	32	2708	20	57	2
	Regulus E.	30	43	51	2539	29	3	32	2559	27	23	40	2579	25	44	16
	Spica γ E.	84	39	3	2514	82	58	10	2531	81	17	40	2548	79	37	34
	Aldebaran W.	63	36	2	2725	65	12	9	2740	66	47	56	2755	68	23	23
15	Saturn W.	29	0	38	2711	30	37	4	2719	32	13	19	2729	33	49	20
	Pollux W.	19	29	13	2664	21	6	41	2680	22	43	48	2695	24	20	35
	Spica γ E.	71	22	54	2650	69	45	7	2667	68	7	43	2684	66	30	41
	SUN E.	132	55	2	3030	131	25	26	3047	129	56	12	3064	128	27	18
	Aldebaran W.	76	15	46	2844	77	49	17	2859	79	22	29	2873	80	55	23
	Saturn W.	41	45	45	2799	43	20	14	2811	44	54	27	2824	46	28	24
Pollux W.	32	19	30	2785	33	54	17	2800	35	28	45	2814	37	2	55	

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Day of the Month.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
8	α Pegasi W.	48 59 20	2682	50 36 24	2651	52 14 9	2623	53 52 32	2599
	Jupiter W.	38 55 35	2144	40 45 27	2141	42 35 23	2140	44 25 21	2138
	Saturn E.	64 12 52	2135	62 22 46	2133	60 32 38	2132	58 42 28	2132
	Pollux E.	72 42 16	2131	70 52 4	2128	69 1 48	2127	67 11 30	2125
9	Mars W.	111 6 35	2370	112 50 53	2372	114 35 8	2375	116 19 19	2378
	Fomalhaut W.	83 2 39	2338	84 47 43	2339	86 32 46	2340	88 17 47	2343
	α Pegasi W.	62 11 34	2516	63 52 25	2505	65 33 31	2497	67 14 48	2490
	Jupiter W.	53 35 26	2140	55 25 24	2142	57 15 19	2145	59 5 9	2148
	Saturn E.	49 31 53	2141	47 41 56	2145	45 52 5	2151	44 2 23	2156
	Pollux E.	57 59 42	2127	56 9 24	2129	54 19 9	2132	52 28 58	2135
10	Fomalhaut W.	97 1 23	2372	98 45 38	2380	100 29 41	2390	102 13 30	2401
	α Pegasi W.	75 42 54	2479	77 24 36	2481	79 6 16	2484	80 47 52	2489
	Jupiter W.	68 12 51	2173	70 1 59	2180	71 50 57	2187	73 39 44	2195
	α Arietis W.	32 23 26	2300	34 9 25	2294	35 55 33	2290	37 41 47	2288
	Saturn E.	34 56 36	2203	33 8 13	2216	31 20 9	2231	29 32 28	2249
	Pollux E.	43 19 35	2160	41 30 7	2167	39 40 49	2174	37 51 43	2182
	Regulus E.	80 2 47	2163	78 13 24	2169	76 24 10	2176	74 35 7	2184
	α Pegasi W.	89 13 42	2528	90 54 16	2540	92 34 34	2551	94 14 36	2564
11	Jupiter W.	82 40 26	2242	84 27 51	2254	86 14 58	2265	88 1 49	2277
	α Arietis W.	46 32 49	2303	48 18 44	2309	50 4 30	2317	51 50 5	2326
	Saturn E.	20 42 7	2393	18 58 22	2442	17 15 47	2505	15 34 40	2588
	Pollux E.	28 49 34	2233	27 1 55	2245	25 14 34	2258	23 27 32	2271
	Regulus E.	65 33 6	2232	63 45 26	2243	61 58 3	2255	60 10 57	2267
	α Pegasi W.	102 29 45	2646	104 7 37	2665	105 45 4	2685	107 22 4	2707
12	Jupiter W.	96 51 25	2344	98 36 21	2359	100 20 55	2373	102 5 9	2389
	α Arietis W.	60 34 31	2378	62 18 37	2391	64 2 24	2405	65 45 52	2418
	Aldebaran W.	30 38 53	2558	32 18 46	2551	33 58 49	2547	35 38 57	2546
	Regulus E.	51 20 8	2335	49 35 0	2349	47 50 12	2365	46 5 47	2381
	Jupiter W.	110 40 41	2468	112 22 39	2485	114 4 13	2501	115 45 25	2519
13	α Arietis W.	74 18 13	2492	75 59 38	2508	77 40 40	2523	79 21 21	2540
	Aldebaran W.	43 58 55	2572	45 38 29	2582	47 17 49	2592	48 56 55	2603
	Regulus E.	37 29 29	2465	35 47 26	2483	34 5 49	2501	32 24 37	2520
	Spica ♀ E.	91 26 30	2448	89 44 3	2465	88 2 0	2481	86 20 20	2497
	α Arietis W.	87 39 2	2623	89 17 26	2640	90 55 26	2657	92 33 4	2674
14	Aldebaran W.	57 8 22	2667	58 45 46	2682	60 22 50	2696	61 59 36	2710
	Saturn W.	22 33 45	2694	24 10 33	2695	25 47		24 3	2704
	Regulus E.	24 5 21	2622	22 26 56	2645	20		11 42	2696
	Spica ♀ E.	77 57 51	2582	76 18 32	2599	74		3	2634
	Aldebaran W.	69 58 30	2785	71 33 18	2799				829
15	Saturn W.	35 25 8	2751	37 0 40	2765				786
	Pollux W.	25 57 3	2725	27 33 10	27				0
	Spica ♀ E.	64 54 2	2717	63 17 44	27				
	SUN E.	126 58 46	3098	125 30 34	?				
16	Aldebaran W.	82 27 58	2901	84 0 16					
	Saturn W.	48 2 4	2849	49 35					
	Pollux W.	38 36 45	2843	40 10					

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Day of the Month.	Star's Name and Position.	Noon.			III ^h .			VI ^h .			IX ^h .						
		P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.	P.L. of diff.						
16	Spica η E.	58	30	59	2780	56	56	5	2795	55	21	31	2811	53	47	17	2825
	SUN E.	121	8	0	3164	119	41	8	3181	118	14	36	3196	116	48	22	3212
17	Aldebaran W.	88	35	26	2954	90	6	36	2967	91	37	30	2980	93	8	8	2991
	Saturn W.	54	14	8	2897	55	46	31	2909	57	18	39	2919	58	50	34	2930
	Pollux W.	44	49	9	2897	46	21	32	2909	47	53	40	2920	49	25	33	2932
	Spica η E.	46	0	45	2894	44	28	19	2907	42	56	9	2920	41	24	15	2931
	SUN E.	109	41	45	3285	108	17	16	3299	106	53	3	3312	105	29	5	3325
18	Saturn W.	66	26	49	2979	67	57	28	2988	69	27	56	2996	70	58	14	3004
	Pollux W.	57	1	24	2985	58	31	55	2993	60	2	16	3003	61	32	25	3011
	Regulus W.	20	29	34	3030	21	59	9	3034	23	28	39	3038	24	58	5	3045
	Spica η E.	33	48	23	2985	32	17	52	2995	30	47	33	3004	29	17	25	3015
	SUN E.	98	32	49	3382	97	10	12	3393	95	47	47	3401	94	25	32	3411
19	Saturn W.	78	27	29	3037	79	56	56	3041	81	26	18	3047	82	55	33	3051
	Pollux W.	69	0	50	3045	70	30	7	3051	71	59	17	3056	73	28	21	3060
	Regulus W.	32	23	52	3065	33	52	45	3069	35	21	33	3071	36	50	18	3075
	SUN E.	87	36	43	3449	86	15	22	3455	84	54	7	3461	83	32	59	3465
20	Saturn W.	90	20	44	3065	91	49	37	3066	93	18	28	3067	94	47	18	3068
	Pollux W.	80	52	32	3075	82	21	12	3076	83	49	51	3078	85	18	28	3078
	Regulus W.	44	13	8	3085	45	41	36	3087	47	10	2	3087	48	38	28	3087
	SUN E.	76	48	29	3482	75	27	45	3485	74	7	4	3486	72	46	24	3487
21	Saturn W.	102	11	25	3064	103	40	18	3062	105	9	14	3060	106	38	12	3057
	Pollux W.	92	41	36	3074	94	10	18	3071	95	39	3	3069	97	7	51	3066
	Regulus W.	56	0	46	3081	57	29	19	3078	58	57	55	3075	60	26	35	3072
	SUN E.	66	3	10	3484	64	42	28	3482	63	21	44	3480	62	0	57	3478
22	Regulus W.	67	51	4	3049	69	20	16	3044	70	49	34	3038	72	18	59	3032
	Spica η W.	13	48	37	3057	15	17	39	3050	16	46	50	3041	18	16	12	3034
	SUN E.	55	16	9	3457	53	54	57	3453	52	33	40	3447	51	12	16	3441
23	Regulus W.	79	48	10	2996	81	18	28	2988	82	48	56	2980	84	19	34	2971
	Spica η W.	25	45	21	2994	27	15	41	2986	28	46	11	2977	30	16	53	2969
	SUN E.	44	23	38	3409	43	1	32	3402	41	39	18	3395	40	16	56	3389
24	Regulus W.	91	55	32	2925	93	27	19	2916	94	59	18	2906	96	31	29	2895
	Spica η W.	37	53	11	2922	39	25	2	2912	40	57	6	2901	42	29	23	2891
	SUN E.	33	23	10	3355	32	0	2	3349	30	36	47	3343	29	13	25	3339
29	SUN W.	26	26	39	2949	27	57	56	2932	29	29	34	2917	31	1	31	2904
	α Pegasi E.	52	24	53	3034	50	55	22	3049	49	26	10	3069	47	57	22	3092
	Jupiter E.	57	13	42	2561	55	33	54	2554	53	53	56	2546	52	13	46	2538
	α Arietis E.	92	19	10	2564	90	39	26	2557	88	59	32	2549	87	19	27	2542
30	SUN W.	38	45	16	2847	40	18	43	2837	41	52	23	2828	43	26	15	2819
	α Pegasi E.	40	42	4	2274	39	17	22	2274	37	53	43	2272	36	31	17	2265
	Jupiter E.	43	50	26	2503	42	9	17	2497	40	28	0	2490	38	46	33	2484
	α Arietis E.	78	56	34	2508	77	15	32	2502	75	34	22	2497	73	53	4	2490
31	SUN W.	51	18	19	2779	52	53	15	2772	54	28	19	2765	56	3	33	2758
	Jupiter E.	30	17	11	2455	28	34	54	2449	26	52	29	2444	25	9	57	2439
	α Arietis E.	65	24	39	2466	63	42	38	2462	62	0	31	2458	60	18	19	2455
	Aldebaran E.	96	7	55	2480	94	26	13	2474	92	44	23	2467	91	2	24	2465

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		^o [′] [″]		^o [′] [″]		^o [′] [″]		^o [′] [″]		
16	Spica ♃ E.	52 13 22	2840	50 39 46	2854	49 6 28	2868	47 33 28	2881	
	SUN E.	115 22 27	3227	113 56 50	3242	112 31 31	3257	111 6 29	3272	
17	Aldebaran W.	94 38 32	3003	96 8 41	3014	97 38 36	3026	99 8 17	3036	
	Saturn W.	60 22 15	2941	61 53 42	2951	63 24 56	2961	64 55 58	2970	
	Pollux W.	50 57 11	2944	52 28 34	2954	53 59 44	2965	55 30 40	2975	
	Spica ♃ E.	39 52 37	2943	38 21 12	2954	36 50 2	2965	35 19 6	2976	
	SUN E.	104 5 23	3337	102 41 54	3349	101 18 39	3361	99 55 38	3372	
18	Saturn W.	72 28 22	3011	73 58 21	3018	75 28 11	3024	76 57 54	3031	
	Pollux W.	63 2 24	3019	64 32 13	3026	66 1 54	3033	67 31 26	3039	
	Regulus W.	26 27 25	3047	27 56 40	3052	29 25 49	3056	30 54 53	3060	
	Spica ♃ E.	27 47 28	3021	26 17 41	3029	24 48 4	3037	23 18 37	3043	
	SUN E.	93 3 28	3420	91 41 34	3427	90 19 48	3436	88 58 12	3442	
19	Saturn W.	84 24 43	3054	85 53 49	3057	87 22 51	3060	88 51 49	3063	
	Pollux W.	74 57 19	3064	76 26 13	3067	77 55 3	3070	79 23 49	3073	
	Regulus W.	38 18 58	3078	39 47 35	3081	41 16 8	3083	42 44 39	3084	
	SUN E.	82 11 56	3470	80 50 58	3474	79 30 5	3477	78 9 15	3480	
20	Saturn W.	96 16 7	3069	97 44 55	3068	99 13 44	3067	100 42 34	3066	
	Pollux W.	86 47 5	3078	88 15 42	3078	89 44 19	3077	91 12 57	3076	
	Regulus W.	50 6 54	3087	51 35 20	3086	53 3 47	3085	54 32 15	3083	
	SUN E.	71 25 45	3488	70 5 7	3488	68 44 29	3487	67 23 50	3486	
21	Saturn W.	108 7 14	3055	109 36 19	3052	111 5 28	3047	112 34 43	3043	
	Pollux W.	98 36 42	3062	100 5 38	3059	101 34 38	3054	103 3 44	3050	
	Regulus W.	61 55 19	3069	63 24 7	3064	64 53 1	3060	66 21 59	3055	
	SUN E.	60 40 8	3474	59 19 15	3470	57 58 17	3467	56 37 16	3462	
22	Regulus W.	73 48 32	3026	75 18 13	3018	76 48 3	3011	78 18 2	3004	
	Spica ♃ W.	19 45 42	3026	21 15 22	3018	22 45 12	3010	24 15 12	3003	
	SUN E.	49 50 46	3436	48 29 10	3429	47 7 26	3423	45 45 36	3416	
23	Regulus W.	85 50 23	2962	87 21 23	2954	88 52 34	2944	90 23 57	2935	
	Spica ♃ W.	31 47 45	2959	33 18 49	2950	34 50 4	2941	36 21 31	2931	
	SUN E.	38 54 27	3381	37 31 49	3375	36 9 4	3368	34 46 11	3361	
24	Regulus W.	98 3 54	2886	99 36 31	2875	101 9 22	2865	102 42 26	2855	
	Spica ♃ W.	44 1 53	2881	45 34 36	2871	47 7 32	2860	48 40 42	2850	
	SUN E.	27 49 58	3335	26 26 27	3332	25 2 53	3331	23 39 17	3331	
29	SUN W.	32 33 45	2891	34 6 15	2879	35 39 1	2867	37 12 2	2857	
	α Pegasi E.	46 29 3	3119	45 1 16	3150	43 34 7	3186		27	
	Jupiter E.	50 33 26	2530	48 52 55	2524	47 12 15	2517			
	α Arietis E.	85 39 12	2535	83 58 47	2528	82 18 12	2521			
30	SUN W.	45 0 18	2810	46 34 33	2802	48 8 58	2791			
	α Pegasi E.	35 10 13	3549	33 50 43	3648	32 33 0	376			
	Jupiter E.	37 4 57	2478	35 23 13	2472	33 41 20	246			
	α Arietis E.	72 11 37	2485	70 30 3	2480	68 48 22	21			
31	SUN W.	57 38 56	2752	59 14 27	2745	60 50 7	-			
	Jupiter E.	23 27 18	2434	21 44 31	2429	20 1 37				
	α Arietis E.	58 36 2	2452	56 53 41	2448	55 11 15				
	Aldebaran E.	89 20 18	2457	87 38 5	2452	85 55				

CONFIGURATIONS OF THE SATELLITES OF JUPITER,
At 8^h, MEAN TIME.

Day of the Month.	West.	East.
1	4	○ 2 3
2	4 2	1 ○ 3
3	4	1 ○ 3 ●
4	3	○ 4 1 2
5	3	1 2 ○ 4
6	3 2	○ 1 4
7	1	○ 3 2 4
8	1	○ 2 3 4
9	2 1	○ 3 4
10	1 ○ 3	2 ○ 4
11	3	○ 1 2 4
12	3	1 2 ○ 4
13	4 3	○ 1
14	4	1 ○ 2 ●
15	4	○ 1 2 3
16	4	2 1 ○ 3
17	4	2 ○ 1 3
18	4	3 ○ 2 ●
19	3 4	1 ○ ●
20	3 2 4	○ 1
21	1	○ 2 4 ●
22	1	○ 1 2 3 4
23	2 1	○ 3 4
24	2	○ 1 3 4
25	3	1 ○ 2 4
26	3	1 ○ 2 4
27	3 2	○ 1 4
28	1 3	○ 4 ●
29	4	○ 1 2 3
30	4	○ 3
31	4	1 ○ 3

This Table represents, at 8^h after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites from each other; and their positions are such as to indicate the directions of the Satellites' motions, which are in all cases to be considered as *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) at the left or right hand of the page, denotes that the Satellite placed by the side of it is *on the disc of Jupiter*, and a black circle (●) that it is either *behind the disc*, or in the *shadow*, of Jupiter.

Day of the Month.	For correcting the Places of the Fixed Stars. At Mean Midnight,				Mean Time of Transit of the First Point of Aries.	Mean Equinoctial Time, adding 0 ^s .176271. Days.	From Mean Noon of January 1.	
	Logarithm of						Day of the Year.	Fraction of the Year.
	A	B	C	D				
1	+0.8053	+1.2832	+9.9194	-0.9312	7 16 41.78	254	335	.917
2	0.7835	1.2859	9.9214	0.9307	7 12 45.86	255	336	.920
3	0.7604	1.2885	9.9233	0.9302	7 8 49.95	256	337	.923
4	+0.7358	+1.2909	+9.9253	-0.9297	7 4 54.04	257	338	.925
5	0.7096	1.2932	9.9272	0.9293	7 0 58.13	258	339	.928
6	0.6816	1.2953	9.9292	0.9288	6 57 2.21	259	340	.931
7	+0.6515	+1.2973	+9.9311	-0.9285	6 53 6.30	260	341	.934
8	0.6190	1.2991	9.9330	0.9281	6 49 10.39	261	342	.936
9	0.5837	1.3008	9.9350	0.9278	6 45 14.48	262	343	.939
10	+0.5451	+1.3023	+9.9369	-0.9275	6 41 18.56	263	344	.942
11	0.5026	1.3037	9.9389	0.9272	6 37 22.65	264	345	.945
12	0.4553	1.3050	9.9408	0.9270	6 33 26.74	265	346	.947
13	+0.4021	+1.3061	+9.9428	-0.9268	6 29 30.82	266	347	.950
14	0.3412	1.3071	9.9447	0.9266	6 25 34.91	267	348	.953
15	0.2703	1.3079	9.9466	0.9265	6 21 39.00	268	349	.956
16	+0.1852	+1.3086	+9.9485	-0.9264	6 17 43.08	269	350	.958
17	0.0791	1.3092	9.9504	0.9264	6 13 47.17	270	351	.961
18	9.9382	1.3096	9.9523	0.9263	6 9 51.26	271	352	.964
19	+9.7280	+1.3099	+9.9542	-0.9263	6 5 55.35	272	353	.966
20	+9.3043	1.3100	9.9561	0.9264	6 1 59.43	273	354	.969
21	-9.1192	1.3101	9.9580	0.9265	5 58 3.52	274	355	.972
22	-9.6672	+1.3099	+9.9599	-0.9266	5 54 7.61	275	356	.975
23	9.9019	1.3097	9.9618	0.9267	5 50 11.69	276	357	.977
24	0.0534	1.3093	9.9636	0.9269	5 46 15.78	277	358	.980
25	-0.1653	+1.3087	+9.9655	-0.9271	5 42 19.87	278	359	.983
26	0.2541	1.3081	9.9673	0.9274	5 38 23.95	279	360	.986
27	0.3277	1.3072	9.9691	0.9277	5 34 28.04			.988
28	-0.3905	+1.3063	+9.9709	-0.9280	5 30 32.13			
29	0.4453	1.3052	9.9727	0.9283	5 26 36.22			
30	0.4938	1.3040	9.9745	0.9287	5 22 40.31			
31	0.5372	1.3026	9.9763	0.9292	5 18 44.40			
32	-0.5766	+1.3011	+9.9781	-0.9296	5 14 48.49			

242 OBLIQUITY OF THE ECLIPTIC, &c.

Mean Noon.	Apparent Obliquity.	The Sun's		Precession in Longitude.	Equation of Equinoxes.		Mean Longitude of ϵ 's ascending Node.
		Horizontal Parallax.	Aberration.		In Long.	In A. R. (in time)	
1856.	° ' "						
	23 27						
Jan. 1	36° 65'	8° 72'	-20° 77'	0° 00'	-8° 06'	-0° 49'	30° 8' 4"
11	36° 78'	8° 72'	20° 76'	1° 38'	7° 55'	0° 46'	29° 36' 7"
21	36° 96'	8° 72'	20° 74'	2° 75'	7° 14'	0° 44'	29° 4' 9"
Feb. 31	37° 17'	8° 70'	20° 72'	4° 13'	6° 85'	0° 42'	28° 33' 1"
10	37° 39'	8° 69'	20° 68'	5° 50'	6° 72'	0° 41'	28° 1' 3"
20	37° 59'	8° 67'	20° 64'	6° 88'	6° 76'	0° 41'	27° 29' 6"
Mar. 1	37° 76'	8° 65'	20° 59'	8° 25'	6° 89'	0° 42'	26° 57' 8"
11	37° 87'	8° 63'	20° 54'	9° 63'	7° 16'	0° 44'	26° 26' 0"
21	37° 92'	8° 61'	20° 48'	11° 00'	7° 44'	0° 46'	25° 54' 2"
Apr. 31	37° 90'	8° 58'	20° 42'	12° 38'	7° 72'	0° 47'	25° 22' 5"
10	37° 83'	8° 55'	20° 36'	13° 76'	7° 94'	0° 49'	24° 50' 7"
20	37° 70'	8° 53'	20° 31'	15° 13'	8° 06'	0° 49'	24° 18' 9"
May 30	37° 55'	8° 51'	20° 26'	16° 51'	8° 06'	0° 49'	23° 47' 2"
10	37° 39'	8° 49'	20° 21'	17° 88'	7° 92'	0° 48'	23° 15' 4"
20	37° 24'	8° 47'	20° 17'	19° 26'	7° 60'	0° 47'	22° 43' 6"
June 30	37° 12'	8° 46'	20° 13'	20° 63'	7° 23'	0° 44'	22° 11' 8"
9	37° 04'	8° 45'	20° 10'	22° 01'	6° 72'	0° 41'	21° 40' 1"
19	37° 02'	8° 44'	20° 08'	23° 38'	6° 17'	0° 38'	21° 8' 3"
July 29	37° 05'	8° 44'	20° 08'	24° 76'	5° 61'	0° 34'	20° 36' 5"
9	37° 14'	8° 44'	20° 09'	26° 13'	5° 09'	0° 31'	20° 4' 8"
19	37° 28'	8° 44'	20° 10'	27° 51'	4° 64'	0° 28'	19° 33' 0"
Aug. 29	37° 46'	8° 45'	20° 12'	28° 89'	4° 31'	0° 26'	19° 1' 2"
8	37° 65'	8° 46'	20° 15'	30° 27'	4° 11'	0° 25'	18° 29' 4"
18	37° 84'	8° 48'	20° 19'	31° 64'	4° 04'	0° 25'	17° 57' 7"
Sept. 28	38° 01'	8° 50'	20° 23'	33° 01'	4° 10'	0° 25'	17° 25' 9"
7	38° 14'	8° 52'	20° 28'	34° 39'	4° 29'	0° 26'	16° 54' 1"
17	38° 22'	8° 54'	20° 33'	35° 76'	4° 54'	0° 28'	16° 22' 3"
Oct. 27	38° 23'	8° 56'	20° 39'	37° 14'	4° 81'	0° 29'	15° 50' 6"
7	38° 18'	8° 59'	20° 45'	38° 51'	5° 07'	0° 31'	15° 18' 8"
17	38° 07'	8° 61'	20° 51'	39° 89'	5° 25'	0° 32'	14° 47' 0"
Nov. 27	37° 92'	8° 64'	20° 56'	41° 27'	5° 33'	0° 33'	14° 15' 2"
6	37° 74'	8° 66'	20° 61'	42° 64'	5° 26'	0° 32'	13° 43' 5"
16	37° 56'	8° 68'	20° 66'	44° 02'	5° 04'	0° 31'	13° 11' 7"
Dec. 26	37° 40'	8° 70'	20° 70'	45° 39'	4° 68'	0° 29'	12° 39' 9"
6	37° 28'	8° 71'	20° 73'	46° 77'	4° 19'	0° 26'	12° 8' 2"
16	37° 21'	8° 72'	20° 76'	48° 14'	3° 63'	0° 22'	11° 36' 4"
26	37° 22'	8° 72'	20° 77'	49° 52'	3° 03'	0° 19'	11° 4' 6"
36	37° 29'	8° 72'	-20° 77'	50° 89'	-2° 46'	-0° 15'	10° 32' 8"

Mean Obliquity, Jan. 1, 1856 - - - - -	23	27	29	21	Daily Motion - 3' 18"
Precession of the Equinoxes for the Year 1856			50° 23' 72"		
for 1 Day			0' 13' 75"		

SUN'S CO-ORDINATES, 1856.

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Mean Noon.	X	ΔX	Y	ΔY	Z	ΔZ	
Jan.	1	+0.1763455	+379	-0.8873276	- 72	-0.3850880	+347
	2	.1935310	369	.8843148	68	.3837805	348
	3	.2106575	359	.8810260	64	.3823533	349
	4	.2277194	348	.8774620	60	.3808066	350
	5	.2447111	338	.8736234	57	.3791408	350
	6	.2616268	328	.8695110	54	.3773560	350
	7	.2784610	317	.8651264	51	.3754533	351
	8	.2952080	307	.8604718	48	.3734333	351
	9	.3118626	296	.8555476	45	.3712964	351
	10	.3284191	286	.8503560	42	.3690436	351
	11	.3448724	276	.8448994	40	.3666754	351
	12	.3612164	266	.8391792	38	.3641930	350
	13	.3774466	256	.8331972	36	.3615969	349
	14	.3935579	246	.8269566	34	.3588887	348
	15	.4095457	236	.8204596	33	.3560690	346
	16	.4254045	227	.8137074	32	.3531389	345
	17	.4411302	217	.8067037	31	.3500994	343
	18	.4567174	208	.7994512	30	.3469519	341
	19	.4721623	198	.7919510	29	.3436972	339
	20	.4874603	189	.7842067	28	.3403363	337
	21	.5026072	180	.7762202	28	.3368703	334
	22	.5175985	171	.7679940	28	.3333004	331
	23	.5324297	162	.7595309	28	.3296275	328
	24	.5470974	153	.7508333	29	.3258529	325
	25	.5615966	145	.7419033	29	.3219775	322
	26	.5759237	137	.7327442	30	.3180027	319
	27	.5900733	129	.7233577	31	.3139291	315
	28	.6040417	121	.7137472	32	.3097584	311
	29	.6178246	114	.7039152	33	.3054914	307
	30	.6314180	107	.6938640	34	.3011294	302
Feb.	31	.6448171	100	.6835969	36	.2966737	297
	1	.6580179	93	.6731175	37	.2921258	293
	2	.6710152	86	.6624286	39	.2874871	288
	3	.6838055	79	.6515336	40	.2827588	283
	4	.6963842	73	.6404360	42	.2779427	278
	5	.7087470	67	.6291393	44	.2730401	273
	6	.7208902	61	.6176471	46	.2680527	268
	7	.7328093	55	.6059640	48	.2629824	262
	8	.7445018	49	.5940935	50	.2578308	256
	9	.7559635	44	.5820393	52	.2525995	250
	10	.7671910	39	.5698065	54	.2472906	244
	11	.7781805	34	.5573984	57	.2419056	238
	12	.7889294	29	.5448196	60	.2364466	232
	13	.7994349	24	.5320744	63	.2309154	226
	14	.8096939	20	.5191670	66	.2253157	219
	15	.8197040	16	.5061000	69	.2196514	212
16	+0.8294620	+ 12	-0.4928810	72	.2139262	205	

Mean Noon.	X	ΔX	Y	ΔY	Z	ΔZ
Feb. 16	+0.8294620	+ 12	-0.4928817	- 70	-0.2139062	+205
17	.8389658	9	.4795132	73	.2081045	198
18	.8482130	6	.4659990	76	.2022395	191
19	.8572012	+ 3	.4523432	78	.1963131	184
20	.8659280	0	.4385503	81	.1903271	176
21	.8743914	- 3	.4246240	83	.1842833	169
22	.8825888	6	.4105684	86	.1781833	161
23	.8905190	9	.3963878	89	.1720291	154
24	.8981790	11	.3820860	92	.1658223	146
25	.9055664	13	.3676670	94	.1595646	138
26	.9126790	15	.3531355	97	.1532581	130
27	.9195148	17	.3384954	99	.1469044	122
28	.9260722	19	.3237516	102	.1405057	114
29	.9323482	21	.3089068	104	.1340632	106
March 1	.9383416	22	.2939671	106	.1275795	98
2	.9440496	23	.2789369	109	.1210565	90
3	.9494710	23	.2638204	111	.1144961	82
4	.9546040	23	.2486231	113	.1079006	74
5	.9594460	23	.2333495	116	.1012720	65
6	.9639962	22	.2180045	119	.0946124	56
7	.9682537	22	.2025933	121	.0879240	48
8	.9722169	21	.1871208	124	.0812091	40
9	.9758850	20	.1715920	126	.0744697	31
10	.9792574	19	.1560119	129	.0677081	23
11	.9823340	18	.1403858	131	.0609265	14
12	.9851129	17	.1247184	133	.0541269	+ 5
13	.9875944	16	.1090149	136	.0473118	- 4
14	.9897792	15	.0932801	139	.0404829	13
15	.9916665	13	.0775184	141	.0336425	22
16	.9932562	11	.0617350	143	.0267926	31
17	.9945485	9	.0459352	145	.0199356	40
18	.9955450	7	.0301216	147	.0130726	49
19	.9962440	5	-0.0143008	149	-0.0062064	57
20	.9966467	3	+0.0015239	151	+0.0006614	66
21	.9967522	- 1	.0173477	153	.0075288	75
22	.9965617	+ 2	.0331664	155	.0143940	84
23	.9960750	6	.0489755	157	.0212550	93
24	.9952939	10	.0647710	159	.0281102	101
25	.9942172	14	.0805483	161	.0349574	110
26	.9928457	18	.0963026	162	.0417947	119
27	.9911795	23	.1120297	164	.0486202	127
28	.9892190	28	.1277248	165	.0554317	136
29	.9869650	33	.1433834	167	.0622275	145
30	.9844174	38	.1590013	169	.0690055	153
31	.9815774	43	.1745731	170	.0757636	161
April 1	.9784460	48	.1900944	172	.0824997	170
2	+0.9750234	+ 53	+0.2055598	-173	+0.0892116	-178

SUN'S CO-ORDINATES, 1856.

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Mean Noon.	X	Δ X	Y	Δ Y	Z	Δ Z
April 2	+0° 9750234	+ 53	+0° 2055598	-173	+0° 0892116	-178
3	·9713112	58	·2209655	174	·0958975	186
4	·9673112	64	·2363060	175	·1025552	194
5	·9630240	70	·2515766	176	·1091826	202
6	·9584506	76	·2667725	177	·1157774	210
7	·9535942	82	·2818893	178	·1223380	217
8	·9484560	88	·2969219	179	·1288621	225
9	·9430379	94	·3118662	180	·1353477	232
10	·9373426	100	·3267176	181	·1417931	240
11	·9313724	106	·3414710	182	·1481960	248
12	·9251282	113	·3561230	182	·1545548	255
13	·9186140	120	·3706693	183	·1608677	263
14	·9118318	127	·3851057	184	·1671331	270
15	·9047842	134	·3994286	184	·1733491	277
16	·8974732	142	·4136341	185	·1795141	284
17	·8899020	150	·4277181	185	·1856264	291
18	·8820728	158	·4416773	186	·1916847	298
19	·8739878	166	·4555081	186	·1976870	305
20	·8656494	174	·4692064	186	·2036320	311
21	·8570610	182	·4827692	186	·2095181	317
22	·8482236	191	·4961925	186	·2153436	323
23	·8391410	200	·5094736	186	·2211075	329
24	·8298146	209	·5226082	186	·2268077	335
25	·8202477	218	·5355924	186	·2324427	340
26	·8104427	227	·5484226	186	·2380109	346
27	·8004022	236	·5610953	185	·2435107	351
28	·7901290	245	·5736067	184	·2489405	356
29	·7796255	255	·5859531	183	·2542987	361
30	·7688957	265	·5981307	182	·2595837	366
May 1	·7579420	275	·6101361	181	·2647938	371
2	·7467679	285	·6219651	180	·2699274	376
3	·7353768	295	·6336146	179	·2749832	381
4	·7237728	306	·6450809	177	·2799593	385
5	·7119585	317	·6563603	175	·2848545	389
6	·6999385	328	·6674496	173	·2896671	393
7	·6877168	339	·6783462	171	·2943959	397
8	·6752968	350	·6890456	169	·2990303	400
9	·6626830	361	·6995462	167		403
10	·6498796	373	·7098445	16		406
11	·6368910	384	·7199375	'		4
12	·6237209	396	·7298232			
13	·6103734	407	·7394992			
14	·5968530	418	·7489630			
15	·5831630	430	·7582120			
16	·5693078	441	·767244			
17	·5552920	453	·776			
18	+0° 5411190	+465	+0° 784			

Mean Noon.	X	Δ X	Y	Δ Y	Z	Δ Z
May 18	+0°5411190	+465	+0°7846515	-138	+0°3405309	-424
19	°5267926	477	°7930217	133	°3441633	425
20	°5123168	489	°8011667	128	°3476982	426
21	°4976953	501	°8090852	123	°3511346	427
22	°4829322	513	°8167744	118	°3544715	428
23	°4680314	526	°8242328	112	°3577083	429
24	°4529967	539	°8314580	106	°3608439	429
25	°4378324	551	°8384479	100	°3638775	429
26	°4225424	563	°8452006	94	°3668080	429
27	°4071311	576	°8517138	87	°3696345	428
28	°3916026	589	°8579852	80	°3723563	427
29	°3759610	601	°8640134	73	°3749723	426
30	°3602108	614	°8697960	66	°3774818	425
31	°3443574	626	°8753314	58	°3798841	424
June 1	°3284050	638	°8806180	50	°3821784	423
2	°3123586	651	°8856536	42	°3843637	421
3	°2962230	663	°8904376	34	°3864399	419
4	°2800029	675	°8949672	26	°3884057	417
5	°2637037	687	°8992426	18	°3902612	415
6	°2473303	699	°9032618	-9	°3920053	413
7	°2308875	712	°9070246	0	°3936384	410
8	°2143802	724	°9105296	+9	°3951595	407
9	°1978136	736	°9137766	18	°3965685	404
10	°1811929	748	°9167644	28	°3978652	401
11	°1645222	759	°9194932	38	°3990494	397
12	°1478070	770	°9219620	48	°4001207	393
13	°1310515	781	°9241710	59	°4010795	389
14	°1142601	792	°9261199	70	°4019252	385
15	°0974377	803	°9278076	82	°4026577	381
16	°0805893	814	°9292364	94	°4032777	377
17	°0637188	825	°9304040	106	°4037846	372
18	°0468305	835	°9313102	118	°4041778	367
19	°0299290	845	°9319554	130	°4044578	362
20	+0°0130187	855	°9323399	143	°4046246	357
21	-0°0038961	865	°9324622	156	°4046777	352
22	°0208113	874	°9323234	169	°4046176	346
23	°0377219	883	°9319230	183	°4044437	340
24	°0546233	892	°9312602	197	°4041561	334
25	°0715108	900	°9303354	211	°4037548	327
26	°0883799	908	°9291486	225	°4032398	320
27	°1052254	917	°9277000	240	°4026111	313
28	°1220432	925	°9259892	255	°4018686	306
29	°1388277	933	°9240160	270	°4010124	299
30	°1555739	940	°9217822	285	°4000429	292
July 1	°1722767	947	°9192872	300	°3989602	285
2	°1889314	953	°9165322	316	°3977647	277
3	-0°2055328	+959	+0°9135180	+332	+0°3964565	-269

SUN'S 'CO-ORDINATES, 1856.

Mean Noon.	X	ΔX	Y	ΔY	Z	ΔZ
July 3	-0° 2055328	+ 959	+0° 9135180	+ 332	+0° 3964565	-269
4	' 2220755	965	' 9102446	348	' 3950359	261
5	' 2385547	971	' 9067138	364	' 3935037	253
6	' 2549658	976	' 9029267	381	' 3918602	245
7	' 2713038	980	' 8988846	398	' 3901060	237
8	' 2875639	984	' 8945892	415	' 3882418	229
9	' 3037416	988	' 8900418	432	' 3862684	220
10	' 3198314	991	' 8852440	449	' 3841863	211
11	' 3358295	994	' 8801968	466	' 3819961	202
12	' 3517321	996	' 8749034	484	' 3796989	192
13	' 3675345	998	' 8693642	502	' 3772950	182
14	' 3832324	1000	' 8635810	520	' 3747851	172
15	' 3988222	1001	' 8575560	537	' 3721704	162
16	' 4142992	1002	' 8512916	555	' 3694516	152
17	' 4296602	1003	' 8447880	573	' 3666294	142
18	' 4449004	1003	' 8380478	591	' 3637042	132
19	' 4600160	1003	' 8310720	609	' 3606770	123
20	' 4750034	1003	' 8238628	627	' 3575483	113
21	' 4898578	1002	' 8164220	644	' 3543192	103
22	' 5045760	1000	' 8087516	662	' 3509902	92
23	' 5191532	997	' 8008516	680	' 3475618	81
24	' 5335857	993	' 7927260	698	' 3440356	70
25	' 5478684	989	' 7843754	716	' 3404115	59
26	' 5619976	984	' 7758027	734	' 3366911	48
27	' 5759690	979	' 7670094	752	' 3328748	37
28	' 5897784	974	' 7579972	770	' 3289638	25
29	' 6034213	969	' 7487695	788	' 3249591	13
30	' 6168933	963	' 7393283	806	' 3208618	- 2
31	' 6301901	957	' 7296769	823	' 3166732	+ 9
Aug. 1	' 6433080	950	' 7198173	841	' 3123944	20
2	' 6562427	943	' 7097528	859	' 3080265	31
3	' 6689896	936	' 6994858	876	' 3035708	43
4	' 6815455	927	' 6890202	893	' 2990288	55
5	' 6939062	918	' 6783586	910	' 2944020	67
6	' 7060687	909	' 6675048	927	' 2896916	79
7	' 7180295	900	' 6564618	944	' 2848992	91
8	' 7297845	890	' 6452330	961	' 2800260	103
9	' 7413309	879	' 6338223	978	' 2750740	115
10	' 7526655	868	' 6222326	995	' 2700441	127
11	' 7637852	856	' 6104671	1011	' 2649381	
12	' 7746877	844	' 5985294	1027	' 2597572	
13	' 7853694	832	' 5864224	1043	' 2545000	
14	' 7958280	819	' 5741498	1058	' 2491	
15	' 8060606	805	' 5617151	1073	' 2437	
16	' 8160642	791	' 5491214	1088	' 2383	
17	' 8258364	777	' 5363715	1103	' 2329	
18	-0° 8353742	+ 763	+0° 5234688	+1117	+0° 2	

Mean Noon.	X	Δ X	Y	Δ Y	Z	Δ Z
Aug. 18	-0.8353742	+763	+0.5234688	+1117	+0.2271818	+225
19	.8446746	747	.5104166	1131	.2215174	238
20	.8537352	731	.4972181	1145	.2157892	250
21	.8625534	715	.4838773	1159	.2099995	262
22	.8711258	699	.4703968	1173	.2041491	274
23	.8794500	682	.4567803	1186	.1982397	286
24	.8875228	664	.4430316	1199	.1922729	298
25	.8953410	646	.4291546	1211	.1862504	310
26	.9029024	628	.4151528	1223	.1801737	322
27	.9102044	609	.4010296	1235	.1740444	334
28	.9172438	590	.3867902	1247	.1678646	346
29	.9240184	570	.3724382	1258	.1616360	358
30	.9305262	550	.3579780	1269	.1553604	370
31	.9367642	530	.3434141	1280	.1490398	382
Sept. 1	.9427309	509	.3287509	1291	.1426761	394
2	.9484234	488	.3139930	1301	.1362712	405
3	.9538406	467	.2991450	1310	.1298273	416
4	.9589810	446	.2842107	1319	.1233460	427
5	.9638429	425	.2691954	1328	.1168293	438
6	.9684250	403	.2541034	1336	.1102795	449
7	.9727260	381	.2389388	1344	.1036982	460
8	.9767442	358	.2237071	1351	.0970877	471
9	.9804800	335	.2084117	1358	.0904496	482
10	.9839310	312	.1930572	1365	.0837859	493
11	.9870970	289	.1776479	1372	.0770983	504
12	.9899772	265	.1621881	1378	.0703888	514
13	.9925704	240	.1466818	1383	.0636592	524
14	.9948765	215	.1311338	1388	.0569114	534
15	.9968940	190	.1155477	1393	.0501472	544
16	0.9986219	164	.0999279	1397	.0433682	554
17	1.0000606	138	.0842785	1401	.0365765	564
18	.0012082	112	.0686039	1404	.0297738	574
19	.0020641	86	.0529083	1407	.0229619	583
20	.0026282	61	.0371955	1410	.0161427	592
21	.0028988	35	.0214706	1413	.0093181	601
22	.0028759	+ 9	+0.0057379	1416	+0.0024902	610
23	.0025585	- 17	-0.0099978	1417	-0.0043390	619
24	.0019464	43	.0257318	1418	.0111675	628
25	1.0010390	69	.0414595	1418	.0179932	636
26	0.9998355	96	.0571764	1418	.0248143	644
27	.9983369	123	.0728771	1418	.0316283	652
28	.9965422	150	.0885568	1417	.0384333	660
29	.9944520	177	.1042106	1415	.0452269	668
30	.9920672	205	.1198333	1413	.0520071	676
Oct. 1	.9893880	233	.1354203	1412	.0587718	683
2	.9864142	261	.1509662	1410	.0655186	690
3	-0.9831474	-289	-0.1664663	+1408	-0.0722456	+697

SUN'S CO-ORDINATES, 1856.

Mean Noon.	X	Δ X	Y	Δ Y	Z	Δ Z
Oct. 3	-0.9831474	- 289	-0.1664663	+1408	-0.0722456	+697
4	.9795894	317	.1819160	1404	.0789507	704
5	.9757407	345	.1973104	1400	.0856318	710
6	.9716017	373	.2126448	1396	.0922868	716
7	.9671749	402	.2279148	1392	.0989139	722
8	.9624610	431	.2431152	1387	.1055108	728
9	.9574624	459	.2582421	1382	.1120759	734
10	.9521794	488	.2732914	1376	.1186071	739
11	.9466144	517	.2882585	1370	.1251027	744
12	.9407682	546	.3031394	1364	.1315609	749
13	.9346429	574	.3179297	1357	.1379798	753
14	.9282404	603	.3326254	1350	.1443576	757
15	.9215618	631	.3472224	1342	.1506925	761
16	.9146084	660	.3617163	1334	.1569828	764
17	.9073820	688	.3761029	1326	.1632265	767
18	.8998842	717	.3903780	1316	.1694218	770
19	.8921174	746	.4045373	1306	.1755669	773
20	.8840822	775	.4185770	1296	.1816600	775
21	.8757812	804	.4324923	1286	.1876991	777
22	.8672158	832	.4462787	1275	.1936823	779
23	.8583886	861	.4599317	1263	.1996076	781
24	.8493018	889	.4734473	1251	.2054732	782
25	.8399574	917	.4868206	1239	.2112771	783
26	.8303572	945	.5000473	1227	.2170173	784
27	.8205049	973	.5131231	1215	.2226921	785
28	.8104034	1001	.5260434	1201	.2282994	785
29	.8000550	1029	.5388039	1187	.2338372	784
30	.7894637	1057	.5514004	1173	.2393041	783
31	.7786325	1085	.5638286	1159	.2446978	782
Nov. 1	.7675642	1112	.5760844	1144	.2500166	781
2	.7562630	1140	.5881638	1128	.2552589	780
3	.7447322	1167	.6000633	1112	.2604232	778
4	.7329757	1195	.6117790	1096	.2655077	776
5	.7209972	1223	.6233079	1079	.2705110	774
6	.7088003	1250	.6346456	1062	.2754314	772
7	.6963892	1277	.6457890	1044	.2802675	769
8	.6837676	1304	.6567357	1026	.2850180	766
9	.6709390	1331	.6674812	1008	.2896817	763
10	.6579070	1358	.6780236	990	.2942570	760
11	.6446754	1385	.6883593	971	.2987425	757
12	.6312483	1412	.6984855	951	.3031371	
13	.6176290	1438	.7083993	930	.3074395	
14	.6038218	1464	.7180975	909	.3116484	
15	.5898300	1490	.7275775	888	.3157625	
16	.5756573	1516	.7368357	867	.319780	
17	.5613080	1541	.7458697	845	.3237	
18	-0.5467858	-1566	-0.7546759	+ 823	-0.32	

SUN'S CO-ORDINATES, 1856.

Mean Noon.	X	Δ X	Y	Δ Y	Z	Δ Z
Nov. 18	-0.5467858	-1566	-0.7546759	+823	-0.3275227	+718
19	.5320946	1591	.7632522	801	.3312447	712
20	.5172386	1616	.7715945	778	.3348652	705
21	.5022223	1640	.7797005	755	.3383830	698
22	.4870502	1663	.7875667	730	.3417967	690
23	.4717267	1686	.7951910	704	.3451060	682
24	.4562562	1709	.8025702	678	.3483080	674
25	.4406434	1731	.8097007	652	.3514025	666
26	.4248936	1753	.8165812	626	.3543885	657
27	.4090118	1775	.8232086	599	.3572647	648
28	.3930033	1796	.8295806	572	.3600300	638
29	.3768731	1817	.8356954	545	.3626837	628
30	.3606267	1838	.8415506	518	.3652246	618
Dec. 1	.3442692	1858	.8471440	490	.3676521	608
2	.3278062	1877	.8524746	461	.3699653	598
3	.3112426	1896	.8575402	432	.3721641	587
4	.2945841	1915	.8623400	403	.3742469	576
5	.2778357	1934	.8668720	374	.3762137	565
6	.2610033	1953	.8711354	344	.3780640	554
7	.2440912	1971	.8751292	313	.3797972	544
8	.2271054	1989	.8788520	282	.3814128	530
9	.2100504	2006	.8823034	251	.3829107	518
10	.1929313	2023	.8854818	220	.3842901	506
11	.1757533	2040	.8883868	188	.3855507	493
12	.1585212	2055	.8910174	156	.3866923	480
13	.1412402	2070	.8933728	123	.3877145	466
14	.1239151	2084	.8954528	90	.3886172	452
15	.1065509	2097	.8972556	57	.3893995	438
16	.0891528	2110	.8987808	+ 24	.3900614	424
17	.0717258	2122	.9000276	- 10	.3906026	410
18	.0542754	2134	.9009954	45	.3910225	396
19	.0368058	2145	.9016836	80	.3913213	382
20	.0193233	2155	.9020918	115	.3914984	367
21	-0.0018332	2165	.9022190	150	.3915536	352
22	+0.0156588	2174	.9020654	184	.3914868	337
23	.0331471	2182	.9016296	219	.3912978	322
24	.0506262	2189	.9009130	254	.3909876	306
25	.0680905	2196	.8999136	289	.3905531	290
26	.0855339	2203	.8986334	324	.3899974	274
27	.1029506	2208	.8970714	360	.3893196	258
28	.1203350	2213	.8952290	397	.3885200	241
29	.1376816	2218	.8931068	434	.3875990	224
30	.1549837	2223	.8907054	471	.3865570	207
31	.1722363	2226	.8880258	508	.3853940	190
32	+0.1894338	-2227	-0.8850688	-544	-0.3841107	+173

JANUARY 1851

THE PLANETS

Planet	Right Ascension	Declination	Distance from Sun	Distance from Earth	Apparent Magnitude
Jupiter	12h 50m	+16° 30'	4.95 AU	4.95 AU	2.9
Saturn	10h 45m	+12° 30'	9.54 AU	9.54 AU	0.7
Uranus	3h 10m	+4° 30'	19.19 AU	19.19 AU	5.9
Neptune	23h 15m	+1° 30'	30.06 AU	30.06 AU	7.8
Mars	22h 15m	+18° 30'	1.52 AU	1.52 AU	1.3
Venus	18h 15m	+7° 30'	0.72 AU	0.72 AU	4.7
Mercury	17h 15m	+13° 30'	0.38 AU	0.38 AU	5.3
Earth	12h 00m	+0° 00'	1.00 AU	1.00 AU	-

EPHEMERIS

OF

THE PLANETS.

JANUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	18 46 58.09	S. 24 50 14.2	0.1571773	0 5.7	281 22 38.1	S. 5 43 52.4	9.657
2	18 54 5.19	24 45 5.9	.1562187	0 8.8	284 18 31.4	5 55 45.3	.654
3	19 1 13.13	24 38 27.3	.1550741	0 12.0	287 16 45.6	6 6 50.9	.652
4	19 8 21.76	24 30 17.6	.1537384	0 15.2	290 17 36.3	6 17 5.7	.648
5	19 15 30.90	24 20 35.7	.1522053	0 18.5	293 21 18.1	6 26 26.3	.645
6	19 22 40.41	24 9 20.8	.1504683	0 21.7	296 28 7.5	6 34 48.7	.641
7	19 29 50.08	23 56 32.6	.1485200	0 24.9	299 38 21.1	6 42 8.9	.637
8	19 36 59.73	23 42 10.2	.1463522	0 28.1	302 52 16.4	6 48 22.0	.633
9	19 44 9.14	23 26 12.9	.1439560	0 31.3	306 10 11.2	6 53 23.2	.629
10	19 51 18.08	23 8 40.3	.1413209	0 34.6	309 32 24.4	6 57 6.6	.624
11	19 58 26.31	22 49 32.6	.1384350	0 37.8	312 59 15.6	6 59 26.5	.619
12	20 5 33.51	22 28 49.6	.1352869	0 41.0	316 31 4.6	7 0 16.2	.614
13	20 12 39.43	22 6 31.2	.1318628	0 44.1	320 8 12.7	6 59 28.9	.608
14	20 19 43.67	21 42 38.3	.1281489	0 47.2	323 51 0.7	6 56 57.0	.602
15	20 26 45.89	21 17 11.4	.1241276	0 50.3	327 39 51.1	6 52 32.6	.596
16	20 33 45.67	20 50 11.9	.1197834	0 53.4	331 35 6.1	6 46 7.6	.590
17	20 40 42.47	20 21 41.3	.1150967	0 56.4	335 37 8.2	6 37 33.0	.584
18	20 47 35.78	19 51 41.5	.1100486	0 59.4	339 46 20.0	6 26 41.0	.577
19	20 54 24.99	19 20 15.4	.1046180	1 2.2	344 3 3.3	6 13 22.1	.571
20	21 1 9.37	18 47 26.6	.0987829	1 5.0	348 27 39.6	5 57 28.2	.564
21	21 7 48.13	18 13 18.9	.0925216	1 7.7	353 0 28.8	5 38 51.7	.557
22	21 14 20.39	17 37 57.6	.0858085	1 10.3	357 41 49.1	5 17 25.8	.550
23	21 20 45.05	17 1 29.4	.0786224	1 12.8	2 31 55.6	4 53 5.5	.543
24	21 27 0.94	16 24 1.5	.0709394	1 15.1	7 31 0.9	4 25 47.7	.536
25	21 33 6.73	15 45 43.3	.0627381	1 17.2	12 39 11.7	3 55 32.3	.529
26	21 39 0.91	15 6 44.9	.0539986	1 19.2	17 56 30.2	3 22 22.6	.522
27	21 44 41.78	14 27 18.9	.0447049	1 21.0	23 22 51.7	2 46 26.3	.515
28	21 50 7.46	13 47 39.9	.0348448	1 22.4	28 58 4.0	2 7 55.8	.511
29	21 55 15.89	13 8 3.8	.0244135	1 23.6	34 41 45.4	1 27 9.4	.506
30	22 0 4.82	12 28 49.2	.0134138	1 24.4	40 33 24.9	0 44 30.9	.501
31	22 4 31.86	11 50 16.4	.0018590	1 24.9	46 32 21.1	S. 0 30.0	.497
32	22 8 34.45	S. 11 12 47.7	.9897744	1 25.0	52 37 42.5	N. 0 44 18.2	9.491

MERCURY.

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JANUARY, 1856.

At Transit over the Meridian of Greenwich.

	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	h m s	s	s	° ' "	"	"	"
	18 46 59.76	+17.82	0.18	S. 24 50 13.2	+11.0	2.3	6.0
	18 54 7.81	17.85	0.17	24 45 3.8	14.8	2.3	6.0
	19 1 16.71	17.89	0.17	24 38 23.6	18.6	2.3	6.0
	19 8 26.30	17.91	0.17	24 30 11.9	22.4	2.3	6.0
	19 15 36.41	17.93	0.17	24 20 27.6	26.3	2.3	6.0
	19 22 46.88	17.94	0.17	24 9 9.9	30.2	2.3	6.1
	19 29 57.51	17.94	0.17	23 56 18.5	34.1	2.3	6.1
	19 37 8.12	17.94	0.17	23 41 52.4	38.1	2.3	6.1
	19 44 18.48	17.92	0.17	23 25 51.0	42.1	2.3	6.2
	19 51 28.36	17.90	0.17	23 8 13.8	46.0	2.3	6.2
	19 58 37.52	17.86	0.17	22 49 1.2	50.0	2.3	6.2
	20 5 45.64	17.81	0.17	22 28 12.8	54.0	2.4	6.3
	20 12 52.44	17.75	0.17	22 5 48.7	58.0	2.4	6.3
	20 19 57.55	17.67	0.17	21 41 49.7	61.9	2.4	6.4
	20 27 0.61	17.58	0.17	21 16 16.3	65.8	2.4	6.4
	20 34 1.18	17.46	0.18	20 49 10.1	69.7	2.5	6.5
	20 40 58.73	17.33	0.18	20 20 32.4	73.4	2.5	6.6
	20 47 52.73	17.17	0.18	19 50 25.5	77.1	2.5	6.7
	20 54 42.56	16.98	0.18	19 18 52.0	80.6	2.5	6.7
	21 1 27.51	16.76	0.18	18 45 55.7	84.0	2.6	6.8
	21 8 6.74	16.50	0.18	18 11 40.7	87.1	2.6	6.9
	21 14 39.36	16.21	0.18	17 36 12.2	90.1	2.6	7.0
	21 21 4.28	15.86	0.19	16 59 37.1	92.8	2.7	7.1
	21 27 20.29	15.46	0.19	16 22 2.7	95.0	2.8	7.3
	21 33 26.05	15.01	0.19	15 43 38.7			7.4
	21 39 20.03	14.48	0.20	15 4 35.2			7.6
	21 45 0.50	13.88	0.20	14 25 5.3			
	21 50 25.59	13.18	0.21	13 45 23.6			
	21 55 33.22	12.42	0.21	13 5 46.2			
	22 0 21.12	11.55	0.22	12 26 32			
	22 4 46.89	10.58	0.22	11 48 1			
	22 8 47.96	+ 9.50	0.22	S. 11 10			

FEBRUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	22 8 34.45	S. 11 12 47.7	9.9897744	1 25.0	52 37 42.5	N. 0 44 18.2	9.4931
2	22 12 10.01	10 36 47.3	.9772008	1 24.6	58 48 26.1	1 29 14.3	.4901
3	22 15 15.87	10 24 0.6	.9641944	1 23.7	65 3 20.3	2 13 35.6	.4885
4	22 17 49.51	9 30 53.8	.9508312	1 22.3	71 21 4.5	2 56 38.2	.4880
5	22 19 48.57	9 1 53.8	.9372060	1 20.3	77 40 12.0	3 37 38.7	.4879
6	22 21 10.94	8 36 6.3	.9234345	1 17.7	83 59 12.9	4 15 56.9	.4887
7	22 21 54.97	8 13 56.5	.9096519	1 14.5	90 16 36.8	4 50 57.3	.4904
8	22 21 59.61	7 55 46.3	.8960130	1 10.6	96 30 54.6	5 22 10.6	.4930
9	22 21 24.45	7 41 54.7	.8826882	1 6.1	102 40 43.1	5 49 15.2	.4904
10	22 20 10.00	7 32 35.8	.8698602	1 0.9	108 44 45.8	6 11 57.4	.5004
11	22 18 17.70	7 27 58.0	.8577173	0 55.1	114 41 56.3	6 30 11.4	.5051
12	22 15 49.99	7 28 3.1	.8464478	0 48.7	120 31 19.4	6 48 58.2	.5105
13	22 12 50.43	7 32 45.7	.8362318	0 41.8	126 12 10.5	6 53 25.7	.5161
14	22 9 23.49	7 41 52.2	.8272305	0 34.4	131 43 57.5	6 58 45.9	.5221
15	22 5 34.57	7 55 2.2	.8195797	0 26.7	137 6 18.9	7 0 15.3	.5288
16	22 1 29.72	8 11 47.8	.8133812	0 18.7	142 19 2.7	6 58 12.4	.5311
17	21 57 15.41	8 31 36.3	.8086981	0 10.6	147 22 6.4	6 52 57.1	.5411
18	21 52 58.22	8 53 51.2	.8055517	{ 0 2.4 }	152 15 34.6	6 44 50.0	.5411
19	21 48 44.55	9 17 53.6	.8039214	23 46.3	156 59 38.9	6 34 11.1	.5511
20	21 44 40.35	9 43 5.6	.8037497	23 38.6	161 34 34.3	6 21 19.9	.5611
21	21 40 50.85	10 8 50.3	.8049468	23 31.2	166 0 41.6	6 6 34.4	.5711
22	21 37 20.55	10 34 34.6	.8073982	23 24.1	170 18 22.4	5 50 11.3	.5711
23	21 34 12.93	10 59 49.3	.8109740	23 17.5	174 28 1.2	5 32 26.2	.5811
24	21 31 30.63	11 24 10.1	.8155348	23 11.3	178 30 2.9	5 13 32.6	.5811
25	21 29 15.38	11 47 16.7	.8209399	23 5.6	182 24 53.8	4 53 42.8	.5911
26	21 27 28.17	12 8 53.7	.8270528	23 0.3	186 12 59.5	4 33 7.6	.6011
27	21 26 9.33	12 28 49.5	.8337448	22 55.5	189 54 45.8	4 11 56.7	.6011
28	21 25 18.62	12 46 55.8	.8408988	22 51.2	193 30 37.5	3 50 18.1	.6111
29	21 24 55.43	13 3 6.7	.8484081	22 47.3	197 0 59.1	3 28 19.3	.6111
30	21 24 58.80	S. 13 17 19.3	9.8561815	22 43.8	200 26 14.5	N. 3 6 6.4	9.6211

MERCURY.

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FEBRUARY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
^m 8 47'96	+ ^s 9'50	^s 0'22	S. ^o 11 ['] 10 ["] 37'4	+ ["] 91'8	["] 3'3	["] 8'8
12 21'79	8'30	0'22	10 34 43'5	87'5	3'4	9'1
15 25'72	7'01	0'23	10 0 45'4	82'1	3'5	9'3
17 57'28	5'61	0'24	9 29 9'4	75'7	3'6	9'6
19 54'15	4'12	0'25	9 0 22'1	68'1	3'7	9'9
21 14'31	2'55	0'26	8 34 48'7	59'5	3'9	10'3
21 56'19	+ 0'93	0'26	8 12 54'0	49'9	4'0	10'6
21 58'83	- 0'72	0'27	7 54 59'2	39'5	4'1	10'9
21 21'90	2'36	0'28	7 41 22'9	28'4	4'2	11'2
20 6'00	3'96	0'29	7 32 18'3	16'9	4'4	11'6
18 12'67	5'47	0'30	7 27 53'0	+ 5'2	4'5	11'9
15 44'41	6'86	0'30	7 28 8'3	- 6'4	4'6	12'2
12 44'78	8'08	0'31	7 32 58'0	17'6	4'7	12'5
9 18'23	9'09	0'32	7 42 8'5	28'1	4'8	12'8
5 30'14	9'87	0'33	7 55 19'2	37'6	4'9	13'0
¹ 57 ²⁶ 46 } ⁵⁷ 23 ¹⁵ 15 }	{ ¹⁰ 22 }	{ ⁰ 33 }	{ ⁸ 31 ² 13 }	{ ⁴⁵ 8 }	{ ⁵ 0 }	{ ¹³ 3 }
52 57'80	10'62	0'34	8 53 53'4	57'8	5'1	13'4
48 45'55	10'35	0'34	9 17 47'6	61'5	5'1	13'5
44 42'63	9'85	0'35	9 42 51'0	63'6	5'1	13'5
40 54'15	9'15	0'35	10 8 27'2	64'2	5'1	13'5
37 24'56	8'29	0'35	10 34 3'9	63'6	5'1	13'4
34 17'32	7'30	0'35	10 59 12'0	61'9	5'0	13'3
31 35'04	6'21	0'34	11 23 27'9	59'3	4'9	13'1
29 19'50	5'07	0'34	11 46 31'1	55'9	4'9	13'0
27 31'72	3'91	0'33	12 8 6'4	51'0	4'8	12'8
26 12'05	2'74	0'33	12 28 2'0	47'1	4'7	12'6
25 20'30	1'58	0'32	12 46 9'5	42'7	4'6	12'4
24 55'93	- 0'46	0'32	13 2 23'0	38'3	4'5	12'2
24 58'01	+ 0'62	0'31	13 16 39'2	33'9	4'4	12'0
25 25'40	+ 1'65	0'30	S. 13 28 55	29'5	4'3	11'8

MERCURY.

MARCH, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vec.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	21 24 58.80	S. 13 17 19.39	.8561815	22 43.8	200 26 14.5	N. 3 6 6.49	.623644
2	21 25 27.55	13 29 31.6	.8641374	22 40.7	203 46 45.5	2 43 45.0	.6234265
3	21 26 20.33	13 39 43.7	.8722092	22 38.0	207 2 54.7	2 21 19.6	.6329445
4	21 27 35.81	13 47 56.2	.8803378	22 35.7	210 15 2.1	1 58 54.4	.6371971
5	21 29 12.50	13 54 10.3	.8884760	22 33.7	213 23 28.0	1 36 32.8	.6411317
6	21 31 9.04	13 58 27.6	.8965844	22 31.9	216 28 30.9	1 14 18.0	.6448985
7	21 33 24.01	14 0 50.8	.9046327	22 30.5	219 30 29.3	0 52 12.2	.6483451
8	21 35 56.13	14 1 21.8	.9125941	22 29.4	222 29 40.3	0 30 18.0	.6515759
9	21 38 44.11	14 0 2.9	.9204491	22 28.5	225 26 20.2	N. 0 8 37.2	.6544342
10	21 41 46.79	13 56 56.7	.9281834	22 27.8	228 20 45.7	S. 0 12 48.5	.6570771
11	21 45 3.06	13 52 5.5	.9357843	22 27.3	231 13 11.0	0 33 57.4	.6594345
12	21 48 31.89	13 45 31.5	.9432435	22 27.0	234 3 51.2	0 54 48.3	.6615659
13	21 52 12.33	13 37 17.1	.9505553	22 26.9	236 53 0.6	1 15 19.8	.6634124
14	21 56 3.53	13 27 24.1	.9577162	22 27.0	239 40 52.6	1 35 30.8	.6649960
15	22 0 4.69	13 15 54.9	.9647241	22 27.2	242 27 40.8	1 55 20.3	.6663171
16	22 4 15.06	13 2 51.2	.9715775	22 27.6	245 13 38.3	2 14 47.0	.6673766
17	22 8 34.01	12 48 14.9	.9782780	22 28.1	247 58 57.5	2 33 50.1	.6681749
18	22 13 0.91	12 32 7.8	.9848254	22 28.7	250 43 50.9	2 52 28.5	.6687113
19	22 17 35.25	12 14 31.6	.9912221	22 29.4	253 28 31.5	3 10 41.1	.6689901
20	22 22 16.51	11 55 27.8	.9974696	22 30.3	256 13 10.6	3 28 26.7	.6690077
21	22 27 4.28	11 34 58.1	.0035703	22 31.2	258 58 1.1	3 45 44.3	.6687644
22	22 31 58.16	11 13 3.6	.0095269	22 32.3	261 43 15.0	4 2 32.5	.6682619
23	22 36 57.79	10 49 46.1	.0153425	22 33.4	264 29 5.2	4 18 49.9	.6674999
24	22 42 2.89	10 25 6.7	.0210192	22 34.6	267 15 43.0	4 34 35.1	.6664747
25	22 47 13.18	9 59 6.7	.0265597	22 35.9	270 3 21.2	4 49 46.5	.6651889
26	22 52 28.43	9 31 47.7	.0319664	22 37.3	272 52 12.7	5 4 22.3	.6636407
27	22 57 48.45	9 3 10.5	.0372414	22 38.8	275 42 30.5	5 18 20.5	.6618290
28	23 3 13.05	8 33 16.4	.0423868	22 40.3	278 34 27.8	5 31 39.0	.6597551
29	23 8 42.13	8 2 6.9	.0474041	22 41.9	281 28 18.3	5 44 15.4	.6574122
30	23 14 15.58	7 29 42.7	.0522945	22 43.6	284 24 15.7	5 56 7.0	.6548043
31	23 19 53.30	6 56 5.4	.0570590	22 45.4	287 22 34.5	6 7 11.0	.6519298
32	23 25 35.25	S. 6 21 15.9	.0616981	22 47.2	290 23 29.7	S. 6 17 24.2	.64878

MERCURY.

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MARCH, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
25°40'	+ 1°65'	0°30'	S. 13 28 55·9	- 28·2	4·4	11·7
16°82'	2°62'	0°30'	13 39 13·1	23·2	4·3	11·5
30°92'	3°54'	0°30'	13 47 31·4	18·3	4·3	11·3
6°27'	4°40'	0°29'	13 53 51·6	13·4	4·2	11·1
1°51'	5°20'	0°29'	13 58 15·5	8·6	4·1	10·9
15°25'	5°94'	0°28'	14 0 45·3	- 3·9	4·0	10·7
46°19'	6°63'	0°28'	14 1 23·2	+ 0·7	4·0	10·5
33°09'	7°27'	0°27'	14 0 11·0	5·3	3·9	10·3
34°75'	7°86'	0°26'	13 57 11·6	9·7	3·8	10·1
50°09'	8°41'	0°26'	13 52 27·2	14·0	3·8	10·0
18°08'	8°92'	0°26'	13 45 59·9	18·3	3·7	9·8
57°76'	9°39'	0°25'	13 37 52·0	22·4	3·6	9·6
48°28'	9°82'	0°25'	13 28 5·3	26·5	3·6	9·5
48°83'	10°22'	0°24'	13 16 42·3	30·5	3·5	9·3
58°66'	10°59'	0°24'	13 3 44·5	34·4	3·5	9·2
17°14'	10°94'	0°23'	12 49 13·9	38·2	3·4	9·0
43°64'	11°26'	0°23'	12 33 12·2	41·9	3·4	8·9
17°64'	11°57'	0°22'	12 15 41·2	45·6	3·3	8·8
58°63'	11°85'	0°22'	11 56 42·3	49·3	3·2	8·6
46°17'	12°11'	0°22'	11 36 17·2	52·8	3·2	8·5
39°87'	12°36'	0°21'	11 14 27·0	56·3	3·2	8·4
39°37'	12°60'	0°21'	10 51 13·6	59·8	3·1	8·3
44°39'	12°82'	0°21'	10 26 38·0	63·2	3·1	8·2
54°64'	13°03'	0°21'	10 0 41·4	66·5	3·1	8·1
9°90'	13°24'	0°20'	9 33 25·5	69·8	3·0	8·0
29°95'	13°43'	0°20'	9 4 51·2	73·1	3·0	7·9
54°62'	13°62'	0°19'	8 34 59·6	76·2	2·9	
23°80'	13°81'	0°19'	8 3 52·3	79·4	2·9	
57°40'	13°99'	0°19'	7 31 30·0	82·5	2·9	
35°28'	14°17'	0°18'	6 57 54·2	85·5	2·8	
17°43'	14°34'	0°18'	6 23 6·0	88·5	2·8	
3°81'	+ 14°52'	0°18'	S. 5 47 6·4	+ 91·5	2	

APRIL, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Lo Rad
	Noon.	Noon.	Noon.		Noon.	Noon.	N
	h m s	° ' "		h m	° ' "	° ' "	
1	23 25 35.25	S. 6 21 15.9	.0616981	22 47.2	290 23 29.7	S. 6 17 24.2	9.64
2	23 31 21.41	5 45 15.5	.0662119	22 49.1	293 27 16.9	6 26 43.0	.64
3	23 37 11.79	5 8 5.2	.0705995	22 51.1	296 34 12.1	6 35 3.5	.64
4	23 43 6.41	4 29 46.4	.0748612	22 53.1	299 44 32.3	6 42 21.7	.63
5	23 49 5.31	3 50 20.1	.0789942	22 55.2	302 58 34.5	6 48 32.6	.63
6	23 55 8.56	3 9 47.9	.0829952	22 57.4	306 16 36.7	6 53 31.4	.62
7	0 1 16.25	2 28 10.8	.0868632	22 59.7	309 38 57.9	6 57 12.3	.62
8	0 7 28.51	1 45 30.5	.0905933	23 2.0	313 5 57.6	6 59 29.5	.61
9	0 13 45.46	1 1 48.4	.0941806	23 4.4	316 37 55.9	7 0 16.3	.61
10	0 20 7.25	S. 0 17 6.3	.0976194	23 6.9	320 15 13.7	6 59 25.8	.60
11	0 26 34.01	N. 0 28 34.2	.1009036	23 9.5	323 58 12.4	6 56 50.5	.60
12	0 33 6.03	1 15 10.9	.1040243	23 12.2	327 47 14.1	6 52 22.6	.59
13	0 39 43.36	2 2 41.6	.1069728	23 15.0	331 42 40.9	6 45 53.6	.59
14	0 46 26.30	2 51 4.0	.1097389	23 17.8	335 44 55.6	6 37 15.1	.58
15	0 53 15.02	3 40 15.0	.1123112	23 20.8	339 54 20.5	6 26 18.5	.57
16	1 0 9.74	4 30 11.5	.1146758	23 23.9	344 11 17.8	6 12 54.9	.57
17	1 7 10.65	5 20 49.8	.1168188	23 27.1	348 36 8.6	5 56 56.1	.56
18	1 14 17.95	6 12 5.8	.1187237	23 30.4	353 9 12.7	5 38 14.5	.55
19	1 21 31.83	7 3 54.9	.1203732	23 33.8	357 50 48.7	5 16 43.4	.55
20	1 28 52.42	7 56 11.6	.1217481	23 37.3	2 41 11.3	4 52 17.6	.54
21	1 36 19.81	8 48 49.9	.1228281	23 40.9	7 40 32.6	4 24 54.4	.53
22	1 43 54.09	9 41 42.5	.1235916	23 44.7	12 48 59.8	3 54 33.5	.52
23	1 51 35.24	10 34 42.3	.1240166	23 48.6	18 6 34.9	3 21 18.6	.52
24	1 59 23.18	11 27 40.3	.1240796	23 52.5	23 33 12.0	2 45 17.3	.51
25	2 7 17.73	12 20 27.3	.1237579	23 56.6	29 8 39.7	2 6 42.5	.51
26	2 15 18.61	13 12 52.9	.1230284	* *	34 52 36.1	1 25 52.3	.50
27	2 23 25.45	14 4 46.0	.1218701	0 0.8	40 44 29.4	S. 0 43 10.9	.50
28	2 31 37.71	14 55 54.7	.1202628	0 5.1	46 43 38.1	N. 0 52.0	.49
29	2 39 54.76	15 46 7.0	.1181891	0 9.5	52 49 10.3	0 45 41.2	.49
30	2 48 15.81	16 35 10.1	.1156352	0 13.9	59 0 2.4	1 30 36.8	.49
31	2 56 39.97	N. 17 22 51.4	.1125909	0 18.3	65 15 2.0	N. 2 14 56.2	9.4

MERCURY.

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APRIL, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
3 ^s .81	+14 ^s .52	0 ^s .18	S. 5 47 6 ^o .4	+ 91 ^o .5	2 ^o .8	7 ^o .4
54 ^m .44	14 ^m .70	0 ^m .18	5 9 56 ^o .6	94 ^o .4	2 ^o .8	7 ^o .3
49 ^m .34	14 ^m .88	0 ^m .18	4 31 37 ^o .9	97 ^o .2	2 ^o .7	7 ^o .2
48 ^m .54	15 ^m .06	0 ^m .18	3 52 11 ^o .5	100 ^o .0	2 ^o .7	7 ^o .1
52 ^m .12	15 ^m .24	0 ^m .18	3 11 38 ^o .7	102 ^o .7	2 ^o .7	7 ^o .1
0 ^m .17	15 ^m .43	0 ^m .17	2 30 0 ^o .6	105 ^o .4	2 ^o .6	7 ^o .0
12 ^m .82	15 ^m .62	0 ^m .17	1 47 19 ^o .1	108 ^o .0	2 ^o .6	7 ^o .0
30 ^m .19	15 ^m .82	0 ^m .17	1 3 35 ^o .2	110 ^o .6	2 ^o .6	6 ^o .9
52 ^m .43	16 ^m .03	0 ^m .17	S. 0 18 50 ^o .9	113 ^o .1	2 ^o .6	6 ^o .9
19 ^m .67	16 ^m .24	0 ^m .17	N. 0 26 52 ^o .2	115 ^o .5	2 ^o .6	6 ^o .8
52 ^m .20	16 ^m .47	0 ^m .17	1 13 32 ^o .0	117 ^o .8	2 ^o .6	6 ^o .8
30 ^m .08	16 ^m .69	0 ^m .17	2 1 6 ^o .1	120 ^o .0	2 ^o .5	6 ^o .7
13 ^m .61	16 ^m .93	0 ^m .17	2 49 32 ^o .5	122 ^o .1	2 ^o .5	6 ^o .7
2 ^m .98	17 ^m .18	0 ^m .17	3 38 47 ^o .9	124 ^o .1	2 ^o .5	6 ^o .6
58 ^m .38	17 ^m .44	0 ^m .17	4 28 49 ^o .4	126 ^o .0	2 ^o .5	6 ^o .6
0 ^m .02	17 ^m .70	0 ^m .17	5 19 33 ^o .1	127 ^o .7	2 ^o .5	6 ^o .6
8 ^m .12	17 ^m .97	0 ^m .17	6 10 55 ^o .1	129 ^o .2	2 ^o .5	6 ^o .5
22 ^m .84	18 ^m .25	0 ^m .17	7 2 50 ^o .6	130 ^o .4	2 ^o .5	6 ^o .5
44 ^m .34	18 ^m .54	0 ^m .17	7 55 14 ^o .3	131 ^o .5	2 ^o .5	6 ^o .5
12 ^m .71	18 ^m .83	0 ^m .17	8 48 0 ^o .0	132 ^o .3	2 ^o .5	6 ^o .5
48 ^m .03	19 ^m .12	0 ^m .17	9 41 0 ^o .4	132 ^o .7	2 ^o .5	6 ^o .5
30 ^m .30	19 ^m .41	0 ^m .17	10 34 8 ^o .5	132 ^o .9	2 ^o .5	6 ^o .5
19 ^m .43	19 ^m .69	0 ^m .16	11 27 15 ^o .0	132 ^o .6	2 ^o .4	6 ^o .4
15 ^m .25	19 ^m .96	0 ^m .16	12 20 10 ^o .9	132 ^o .0	2 ^o .4	6 ^o .4
17 ^m .47	20 ^m .22	0 ^m .17	13 12 45 ^o .5	130 ^o .8	2 ^o .5	6 ^o .5
* * *	* * *	* * *	* * *	* * *	* * *	* * *
25 ^m .72	20 ^m .46	0 ^m .18	14 4 47 ^o .7	129 ^o .2	2 ^o .5	6 ^o .5
39 ^m .45	20 ^m .68	0 ^m .18	14 56 5 ^o .4	127 ^o .1	2 ^o .5	6 ^o .5
58 ^m .03	20 ^m .86	0 ^m .18	15 46 26 ^o .6	124 ^o .5	2 ^o .5	6 ^o .5
20 ^m .65	21 ^m .01	0 ^m .18	16 35 38 ^o .0	121 ^o .4	2 ^o .5	6 ^o .5
46 ^m .41	+21 ^m .12	0 ^m .18	N. 17 23 27 ^o .2	+117 ^o .7	2 ^o .5	(

MAY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
	h m s	° ' "		l m	° ' "	° ' "	
1	2 56 39.97	N.17 22 51.4	0.1125909	0 18.3	65 15 2.0	N.2 14 56.2	9.488
2	3 5 6.21	18 8 58.7	.1090502	0 22.8	71 32 49.9	2 57 55.7	.487
3	3 13 33.51	18 53 20.5	.1050121	0 27.4	77 51 58.5	3 38 51.7	.487
4	3 22 0.62	19 35 45.6	.1004809	0 31.9	84 10 57.7	4 17 4.4	.488
5	3 30 26.35	20 16 4.2	.0954651	0 36.4	90 28 16.8	4 51 58.3	.490
6	3 38 49.41	20 54 8.0	.0899767	0 40.8	96 42 27.6	5 23 4.1	.493
7	3 47 8.62	21 29 50.1	.0840347	0 45.2	102 52 5.5	5 50 0.8	.496
8	3 55 22.79	22 3 5.3	.0776591	0 49.5	108 55 56.6	6 12 34.8	.500
9	4 3 30.69	22 33 49.6	.0708713	0 53.7	114 52 53.5	6 30 40.6	.505
10	4 11 31.27	23 2 1.0	.0636989	0 57.8	120 42 1.2	6 44 19.5	.510
11	4 19 23.51	23 27 38.6	.0561665	1 1.7	126 22 36.4	6 53 39.1	.516
12	4 27 6.44	23 50 43.1	.0483011	1 5.5	131 54 6.2	6 58 52.1	.522
13	4 34 39.19	24 11 16.1	.0401299	1 9.1	137 16 9.7	7 0 14.6	.529
14	4 42 0.96	24 29 20.3	.0316790	1 12.5	142 28 35.2	6 58 5.6	.535
15	4 49 11.04	24 44 59.2	.0229734	1 15.8	147 31 20.7	6 52 44.8	.542
16	4 56 8.77	24 58 17.0	.0140384	1 18.8	152 24 31.9	6 44 32.7	.549
17	5 2 53.53	25 9 18.3	.0048976	1 21.6	157 8 18.9	6 33 49.5	.556
18	5 9 24.74	25 18 8.4	.9955731	1 24.1	161 42 58.2	6 20 54.5	.563
19	5 15 41.91	25 24 52.3	.9860866	1 26.5	166 8 49.4	6 6 5.7	.570
20	5 21 44.52	25 29 35.8	.9764593	1 28.6	170 26 14.8	5 49 40.1	.576
21	5 27 32.16	25 32 24.6	.9667100	1 30.4	174 35 39.3	5 31 52.7	.583
22	5 33 4.35	25 33 24.3	.9568592	1 32.0	178 37 27.3	5 12 57.2	.589
23	5 38 20.68	25 32 40.8	.9469251	1 33.3	182 32 5.5	4 53 5.9	.596
24	5 43 20.72	25 30 19.7	.9369272	1 34.3	186 19 59.3	4 32 29.7	.603
25	5 48 4.08	25 26 26.7	.9268835	1 35.1	190 1 34.4	4 11 17.5	.609
26	5 52 30.36	25 21 7.3	.9168142	1 35.5	193 37 15.9	3 49 38.3	.615
27	5 56 39.17	25 14 27.2	.9067387	1 35.7	197 7 28.0	3 27 38.9	.619
28	6 0 30.11	25 6 32.0	.8966778	1 35.6	200 32 34.4	3 5 25.7	.624
29	6 4 2.80	24 57 26.6	.8866539	1 35.2	203 52 57.4	2 43 4.0	.629
30	6 7 16.90	24 47 16.6	.8766896	1 34.5	207 8 58.9	2 20 38.6	.633
31	6 10 12.02	24 36 7.1	.8668106	1 33.5	210 20 59.4	1 58 13.5	.637
32	6 12 47.85	N.24 24 3.3	.8570437	1 32.1	213 29 19.1	N.1 35 52.1	.641

MERCURY.

261

MAY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
2 56 46.41	+21.12	0.18	N.17 23 27.2	+117.7	2.5	6.6
3 5 14.26	21.19	0.18	18 9 41.8	113.5	2.5	6.7
3 13 43.16	21.21	0.18	18 54 10.0	108.8	2.5	6.7
3 22 11.84	21.17	0.18	19 36 40.6	103.7	2.6	6.8
3 30 39.10	21.09	0.18	20 17 3.6	98.2	2.6	6.9
3 39 3.63	20.95	0.18	20 55 10.8	92.4	2.6	7.0
3 47 24.23	20.76	0.19	21 30 55.1	86.3	2.7	7.1
3 55 39.69	20.52	0.19	22 4 11.2	80.0	2.7	7.2
4 3 48.77	20.23	0.20	22 34 55.5	73.6	2.8	7.3
4 11 50.40	19.90	0.20	23 3 5.7	67.2	2.8	7.4
4 19 43.56	19.52	0.20	23 28 41.1	60.8	2.8	7.5
4 27 27.26	19.11	0.21	23 51 42.5	54.4	2.9	7.7
4 35 0.65	18.66	0.21	24 12 11.5	48.1	2.9	7.8
4 42 22.91	18.19	0.22	24 30 10.9	41.9	3.0	8.0
4 49 33.33	17.68	0.23	24 45 44.7	35.9	3.1	8.1
4 56 31.25	17.14	0.23	24 58 56.7	30.1	3.1	8.3
5 3 16.05	16.59	0.24	25 9 51.7	24.5	3.2	8.5
5 9 47.16	16.00	0.24	25 18 35.4	19.2	3.3	8.7
5 16 4.10	15.40	0.25	25 25 12.7	14.0	3.4	8.9
5 22 6.34	14.78	0.25	25 29 49.5	9.1	3.4	9.1
5 27 53.47	14.14	0.26	25 32 31.4	+ 4.4	3.5	9.3
5 33 25.03	13.49	0.26	25 33 24.5	0.0	3.6	9.5
5 38 40.62	12.81	0.27	25 32 34.6	- 4.2	3.7	9.7
5 43 39.81	12.12	0.27	25 30 7.1	8.1	3.7	9.9
5 48 22.20	11.41	0.28	25 26 8.0	11.8	3.8	10.1
5 52 47.42	10.69	0.29	25 20 43.1	15.2	3.9	10.4
5 56 55.08	9.95	0.29	25 13 57.9	18.5	4.0	10.7
6 0 44.81	9.19	0.30	25 5 57.9		4.1	10.9
6 4 16.22	8.42	0.31	24 56 48		2	11.2
6 7 28.98	7.64	0.32	24 46 31			
6 10 22.72	6.84	0.32	24 35 2			
6 12 57.15	+ 6.03	0.33	N.24 2			

MERCURY.

JUNE, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Lat. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	6 12 47.85	N.24 24 3.3	9.8570437	1 32.1	213 29 19.1	N.1 35 52.1	9.64
2	6 15 4.06	24 11 10.0	*8474176	1 30.4	216 34 16.7	1 13 37.4	.64
3	6 17 0.44	23 57 32.6	*8379651	1 28.4	219 36 9.9	0 51 31.9	.64
4	6 18 36.75	23 43 15.7	*8287192	1 26.0	222 35 16.3	0 29 38.1	.61
5	6 19 52.86	23 28 24.2	*8197169	1 23.3	225 31 52.3	N.0 7 57.6	.61
6	6 20 48.69	23 13 3.4	*8109980	1 20.3	228 26 13.8	S.0 13 27.5	.6
7	6 21 24.30	22 57 18.2	*8026056	1 16.9	231 18 35.9	0 34 35.9	.6
8	6 21 39.84	22 41 13.7	*7945832	1 13.2	234 9 13.8	0 55 26.3	.6
9	6 21 35.60	22 24 55.2	*7869797	1 9.2	236 58 20.6	1 15 57.2	.6
10	6 21 12.13	22 8 27.8	*7798430	1 4.9	239 46 10.8	1 36 7.5	.6
11	6 20 29.97	21 51 57.3	*7732242	1 0.3	242 32 57.6	1 55 56.3	.6
12	6 19 29.99	21 35 29.2	*7671746	0 55.3	245 18 53.8	2 15 22.4	.6
13	6 18 13.27	21 19 9.6	*7617458	0 50.1	248 4 12.1	2 34 24.8	.6
14	6 16 41.04	21 3 4.7	*7569871	0 44.6	250 49 5.3	2 53 2.4	.6
15	6 14 54.80	20 47 20.8	*7529456	0 38.9	253 33 45.9	3 11 14.1	.6
16	6 12 56.25	20 32 4.6	*7496676	0 33.0	256 18 25.7	3 28 59.1	.6
17	6 10 47.33	20 17 23.2	*7471904	0 27.0	259 3 16.9	3 46 15.8	.6
18	6 8 30.13	20 3 23.2	*7455463	0 20.8	261 48 32.2	4 3 2.9	.6
19	6 6 6.89	19 50 11.6	*7447628	0 14.5	264 34 23.2	4 19 19.4	.6
20	6 3 39.99	19 37 55.3	*7448570	0 8.1	267 21 2.8	4 35 3.7	.6
21	6 1 11.84	19 26 40.8	*7458378	{23 51.1}	270 8 43.8	4 50 14.0	.6
22	5 58 44.96	19 16 34.6	*7477069	23 49.1	272 57 37.8	5 4 48.7	.6
23	5 56 21.81	19 7 42.3	*7504543	23 42.9	275 47 58.7	5 18 45.7	.6
24	5 54 4.75	19 0 8.7	*7540619	23 36.8	278 39 59.4	5 32 3.0	.6
25	5 51 56.04	18 53 58.4	*7585051	23 30.9	281 33 53.5	5 44 38.0	.6
26	5 49 57.85	18 49 14.8	*7637493	23 25.2	284 29 55.0	5 56 28.2	.6
27	5 48 12.16	18 46 0.0	*7697558	23 19.8	287 28 18.6	6 7 30.6	.6
28	5 46 40.73	18 44 15.4	*7764786	23 14.6	290 29 19.1	6 17 42.2	.6
29	5 45 25.14	18 44 1.1	*7838704	23 9.7	293 33 12.1	6 26 59.3	.6
30	5 44 26.77	18 45 16.3	*7918787	23 5.1	296 40 13.4	6 35 18.1	.6
31	5 43 46.78	N.18 47 59.6	9.8004512	23 0.8	299 50 40.1	S.6 42 34.2	9.6

MERCURY.

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JUNE, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
^{h m s} 6 12 57.15	+ 6.03	^s 0.33	^{° ' "} N.24 23 15.2	- 31.3	" 4.5	" 11.9
6 15 11.96	5.21	0.33	24 10 19.9	33.2	4.6	12.2
6 17 6.93	4.37	0.34	23 56 41.0	35.0	4.7	12.4
6 18 41.85	3.54	0.35	23 42 23.3	36.5	4.8	12.7
6 19 56.63	2.69	0.36	23 27 31.6	37.8	4.9	13.0
6 20 51.20	1.85	0.36	23 12 11.3	38.9	5.0	13.2
6 21 25.63	1.02	0.37	22 56 27.1	39.8	5.1	13.5
6 21 40.10	+ 0.19	0.38	22 40 24.2	40.4	5.2	13.8
6 21 34.91	- 0.62	0.38	22 24 7.8	40.9	5.3	14.0
6 21 10.62	1.40	0.38	22 7 43.2	41.1	5.4	14.2
6 20 27.80	2.16	0.39	21 51 15.9	41.1	5.5	14.5
6 19 27.34	2.87	0.39	21 34 51.4	40.9	5.5	14.7
6 18 10.31	3.54	0.40	21 18 35.7	40.4	5.6	14.9
6 16 37.95	4.15	0.41	21 2 35.0	39.6	5.7	15.0
6 14 51.74	4.69	0.41	20 46 55.6	38.6	5.7	15.2
6 12 53.39	5.16	0.41	20 31 44.0	37.3	5.8	15.3
6 10 44.82	5.54	0.40	20 17 7.1	35.7	5.8	15.4
6 8 28.09	5.84	0.40	20 3 11.4	33.9	5.8	15.4
6 6 5.42	6.04	0.40	19 50 3.9	31.7	5.8	15.4
6 3 39.16	6.14	0.40	19 37 51.3	29.3	5.8	15.4
^{6 1 11.66} {5 58 43.43}	^{6.14} {6.03}	^{0.40} {0.40}	^{19 25 40.0} {19 26 36.4}	^{28.6} {28.7}	^{5.8} {5.8}	^{15.4} {15.4}
5 56 22.88	5.83	0.40	19 7 46.0	20.5	5.7	15.2
5 54 6.34	5.53	0.40	19 0 13.6	17.2	5.7	15.1
5 51 58.04	5.14	0.40	18 54 3.7	13.6	5.7	15.0
5 50 0.14	4.67	0.39	18 49 19.6	10.0	5.6	14.8
5 48 14.56	4.12	0.39	18 46 3.6	6.3	5.5	14.6
5 46 43.08	3.50	0.38	18 44 17.1	- 2.5	5.4	14.3
5 45 27.27	2.81	0.37	18 44 0.2	+ 1.2	5.3	14.1
5 44 28.51	2.08	0.37	18 45 12.2	4.8	5.2	13.9
5 43 47.96	1.30	0.36	18 47 51.8	8.4	5.1	13.6
5 43 26.62	- 0.48	0.35	N.18 51 55.8	+ 11.9	5.0	13.3

MERCURY.

JULY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	5 43 46.78	N.18 47 59.6	.8004512	23 0.8	299 50 40.1	S.6 42 34.2	9.631
2	5 43 26.17	18 52 7.6	.8095333	22 56.8	303 4 49.3	6 48 43.0	9.631
3	5 43 25.72	18 57 36.8	.8190716	22 53.2	306 22 59.3	6 53 39.4	9.621
4	5 43 46.06	19 4 22.4	.8290126	22 50.0	309 45 29.0	6 57 17.9	9.621
5	5 44 27.71	19 12 19.3	.8393068	22 47.1	313 12 37.9	6 59 32.3	9.611
6	5 45 31.07	19 21 21.1	.8499021	22 44.5	316 44 45.5	7 0 16.3	9.611
7	5 46 56.37	19 31 21.3	.8607528	22 42.4	320 22 13.5	6 59 22.7	9.601
8	5 48 43.81	19 42 12.4	.8718125	22 40.6	324 5 22.8	6 56 44.0	9.601
9	5 50 53.50	19 53 46.7	.8830386	22 39.1	327 54 36.0	6 52 12.5	9.591
10	5 53 25.47	20 5 55.9	.8943885	22 38.1	331 50 15.1	6 45 39.7	9.581
11	5 56 19.74	20 18 31.0	.9058232	22 37.4	335 52 42.7	6 36 57.1	9.581
12	5 59 36.28	20 31 22.9	.9173046	22 37.1	340 2 21.1	6 25 56.0	9.571
13	6 3 14.99	20 44 21.8	.9287958	22 37.1	344 19 32.7	6 12 27.8	9.571
14	6 7 15.75	20 57 17.9	.9402600	22 37.5	348 44 38.3	5 56 24.1	9.561
15	6 11 38.43	21 10 0.4	.9516639	22 38.3	353 17 58.1	5 37 37.4	9.561
16	6 16 22.78	21 22 18.3	.9629719	22 39.5	357 59 49.9	5 16 0.9	9.551
17	6 21 28.57	21 34 0.8	.9741498	22 40.9	2 50 28.8	4 51 29.8	9.551
18	6 26 55.46	21 44 55.7	.9851633	22 42.7	7 50 6.8	4 24 1.0	9.541
19	6 32 43.04	21 54 51.6	.9959785	22 44.9	12 58 50.9	3 53 34.8	9.541
20	6 38 50.79	22 3 36.2	0.0065603	22 47.4	18 16 42.8	3 20 14.6	9.531
21	6 45 18.08	22 10 57.6	0.0168744	22 50.2	23 43 36.9	2 44 8.4	9.531
22	6 52 4.17	22 16 43.8	0.0268870	22 53.3	29 19 20.5	2 5 29.1	9.521
23	6 59 8.13	22 20 42.9	0.0365634	22 56.7	35 3 31.9	1 24 35.2	9.521
24	7 6 28.88	22 22 44.0	0.0458715	23 0.4	40 55 39.1	S.0 41 50.7	9.511
25	7 14 5.24	22 22 36.4	0.0547795	23 4.3	46 55 0.3	N.0 2 14.1	9.511
26	7 21 55.75	22 20 11.0	0.0632585	23 8.4	53 0 43.1	0 47 4.1	9.501
27	7 29 58.87	22 15 19.8	0.0712821	23 12.7	59 11 44.2	1 31 59.3	9.501
28	7 38 12.91	22 7 56.1	0.0788272	23 17.2	65 26 50.8	2 16 17.0	9.491
29	7 46 36.06	21 57 55.3	0.0858752	23 21.7	71 44 41.9	2 59 13.3	9.491
30	7 55 6.45	21 45 14.8	0.0924131	23 26.4	78 3 51.6	3 40 4.9	9.481
31	8 3 42.17	21 29 53.8	0.0984322	23 31.1	84 22 49.2	4 18 11.9	9.481
32	8 12 21.34	N.21 11 53.3	0.1039300	23 35.9	90 40 4.0	N.4 52 59.0	9.471

MERCURY.

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JULY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Light Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
5 43 26.62	- 0.48	0.35	N. 18 51 55.8	+ 11.9	5.0	13.3
5 43 25.30	+ 0.37	0.34	18 57 20.8	15.2	4.9	13.0
5 43 44.64	1.24	0.34	19 4 2.0	18.2	4.8	12.7
5 44 25.17	2.14	0.33	19 11 54.5	21.1	4.7	12.4
5 45 27.32	3.04	0.33	19 20 52.2	23.7	4.6	12.1
5 46 51.34	3.96	0.32	19 30 48.4	26.0	4.5	11.8
5 48 37.45	4.88	0.31	19 41 36.0	27.9	4.3	11.5
5 50 45.77	5.81	0.30	19 53 7.3	29.6	4.2	11.2
5 53 16.35	6.74	0.29	20 5 14.1	30.9	4.1	10.9
5 56 9.23	7.67	0.28	20 17 47.4	31.8	4.0	10.7
5 59 24.40	8.60	0.28	20 30 38.3	32.3	3.9	10.4
6 3 1.79	9.52	0.27	20 43 36.8	32.5	3.8	10.1
6 7 1.29	10.44	0.26	20 56 33.4	32.2	3.7	9.9
6 11 22.80	11.35	0.26	21 9 17.2	31.4	3.6	9.6
6 16 6.07	12.25	0.25	21 21 37.2	30.2	3.5	9.4
6 21 10.90	13.15	0.25	21 33 22.6	28.5	3.4	9.1
6 26 36.99	14.02	0.24	21 44 21.1	26.3	3.4	8.9
6 32 23.90	14.88	0.24	21 54 21.2	23.6	3.3	8.7
6 38 31.13	15.72	0.23	22 3 10.7	20.4	3.2	8.5
6 44 58.10	16.53	0.22	22 10 37.4	16.7	3.1	8.3
6 51 44.08	17.30	0.22	22 16 29.3	12.5	3.1	8.1
6 58 48.14	18.03	0.21	22 20 34.3	7.8	3.0	7.9
7 6 9.19	18.72	0.21	22 22 41.3	+ 2.7	2.9	7.7
7 13 46.06	19.35	0.21	22 22 39.4	- 2.9	2.9	7.6
7 21 37.32	19.91	0.20	22 20 19.3	8.9	2.8	7.4
7 29 41.37	20.41	0.20	22 15 32.8	15.2	2.8	7.3
7 37 56.53	20.84	0.19	22 8 13.1	21.6	2.7	7.2
7 46 20.98	21.19	0.19	21 58 15.5	28.2	2.7	7.1
7 54 52.81	21.45	0.18	21 45 37.1	35.0	2.6	6.9
8 3 30.09	21.64	0.18	21 30 17.1	41.7	2.6	6.8
8 12 10.91	21.75	0.18	21 12 16.6	48.3	2.5	6.7
8 20 53.41	+21.78	0.18	N.20 51 38.8	- 54.8	2.5	6.7

AUGUST, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	h m s 8 12 21.34	N. 21 11 53.3	0.1039300	h m 23 35.9	o ' " / 90 40 4.0	N. 4 52 59.0	9.49
2	8 21 2.13	20 51 16.8	.1089081	23 40.7	96 54 7.8	5 23 57.7	.49
3	8 29 42.81	20 28 9.0	.1133730	23 45.4	103 33 36.9	5 50 46.5	.49
4	8 38 21.79	20 2 36.1	.1173374	23 50.1	109 7 16.0	6 13 12.4	.50
5	8 46 57.63	19 34 45.9	.1208156	23 54.6	115 3 59.5	6 31 9.8	.50
6	8 55 29.10	19 4 46.8	.1238270	23 59.1	120 52 51.9	6 44 40.6	.51
7	9 3 55.12	18 32 47.6	.1263917	* *	126 33 10.7	6 53 52.4	.51
8	9 12 14.79	17 58 58.0	.1285320	0 3.5	132 4 23.5	6 58 58.0	.51
9	9 20 27.42	17 23 27.6	.1302708	0 7.8	137 26 9.7	7 0 13.8	.51
10	9 28 32.45	16 46 25.9	.1316315	0 12.0	142 38 17.7	6 57 58.5	.51
11	9 36 29.50	16 8 2.0	.1326371	0 16.0	147 40 45.9	6 52 32.1	.51
12	9 44 18.29	15 28 24.9	.1333097	0 19.9	152 33 39.2	6 44 15.1	.51
13	9 51 58.67	14 47 43.2	.1336705	0 23.6	157 17 9.1	6 33 27.5	.51
14	9 59 30.59	14 6 4.8	.1337400	0 27.2	161 51 32.0	6 20 28.7	.51
15	10 6 54.07	13 23 37.3	.1335373	0 30.7	166 17 7.2	6 5 36.8	.51
16	10 14 9.19	12 40 27.6	.1330789	0 34.0	170 34 17.8	5 49 8.3	.51
17	10 21 16.10	11 56 42.3	.1323814	0 37.1	174 43 27.8	5 31 18.6	.51
18	10 28 14.96	11 12 27.3	.1314587	0 40.2	178 45 2.4	5 12 21.2	.51
19	10 35 5.99	10 27 48.0	.1303239	0 43.1	182 39 27.7	4 52 28.3	.51
20	10 41 49.41	9 42 49.7	.1289891	0 45.9	186 27 9.5	4 31 50.7	.51
21	10 48 25.46	8 57 36.8	.1274645	0 48.5	190 8 33.3	4 10 37.8	.51
22	10 54 54.39	8 12 14.0	.1257589	0 51.1	193 44 4.2	3 48 57.7	.51
23	11 1 16.45	7 26 44.7	.1238804	0 53.5	197 14 6.5	3 26 57.8	.51
24	11 7 31.88	6 41 13.2	.1218355	0 55.8	200 39 3.8	3 4 44.3	.51
25	11 13 40.93	5 55 42.4	.1196302	0 58.0	203 59 18.5	2 42 22.4	.51
26	11 19 43.84	5 10 15.6	.1172695	1 0.1	207 15 12.1	2 19 57.0	.51
27	11 25 40.84	4 24 55.9	.1147574	1 2.1	210 27 5.6	1 57 32.0	.51
28	11 31 32.13	3 39 45.6	.1120972	1 4.0	213 35 18.4	1 35 10.7	.51
29	11 37 17.93	2 54 47.7	.1092908	1 5.9	216 40 9.7	1 12 56.2	.51
30	11 42 58.41	2 10 4.4	.1063405	1 7.6	219 41 57.5	0 50 51.1	.51
31	11 48 33.75	1 25 38.2	.1032468	1 9.3	222 40 58.7	0 28 57.6	.51
32	11 54 4.11	N. 0 41 31.4	0.1000105	1 10.8	225 37 30.5	N. 0 7 17.7	9.46

AUGUST, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 8 20 53.41	+21.78	0.18	N. 20 51 38.8	- 54.8	2.5	6.7
2	8 29 35.81	21.74	0.18	20 28 28.6	61.0	2.5	6.6
3	8 38 16.53	21.64	0.18	20 2 52.3	66.9	2.5	6.5
4	8 46 54.08	21.48	0.18	19 34 57.9	72.5	2.5	6.5
5	8 55 27.21	21.27	0.17	19 4 53.7	77.8	2.4	6.4
6	9 3 54.82	21.02	0.17	18 32 48.7	82.6	2.4	6.4
7	9 12 16.00	20.74	0.17	17 58 52.9	87.0	2.4	6.4
8	* * *	*	*	* * *	*	*	*
9	9 20 30.06	20.43	0.17	17 23 15.8	91.0	2.4	6.4
10	9 28 36.44	20.10	0.17	16 46 7.1	94.6	2.4	6.3
11	9 36 34.74	19.76	0.17	16 7 36.0	97.9	2.4	6.3
12	9 44 24.69	19.41	0.17	15 27 51.6	100.8	2.4	6.3
13	9 52 6.15	19.05	0.17	14 47 2.6	103.3	2.4	6.3
14	9 59 39.05	18.69	0.17	14 5 17.1	105.5	2.4	6.3
15	10 7 3.42	18.34	0.17	13 22 42.6	107.4	2.4	6.3
16	10 14 19.35	17.99	0.16	12 39 26.1	109.0	2.4	6.3
17	10 21 27.00	17.65	0.16	11 55 34.1	110.3	2.4	6.3
18	10 28 26.53	17.31	0.16	11 11 12.8	111.4	2.4	6.3
19	10 35 18.17	16.99	0.16	10 26 27.5	112.3	2.4	6.4
20	10 42 2.14	16.68	0.16	9 41 23.5	113.0	2.4	6.4
21	10 48 38.69	16.37	0.16	8 56 5.1	113.5	2.4	6.4
22	10 55 8.06	16.08	0.16	8 10 37.3	113.8	2.4	6.4
23	11 1 30.52	15.80	0.17	7 25 3.2	114.0	2.5	6.5
24	11 7 46.31	15.52	0.17	6 39 27.3	114.0	2.5	6.5
25	11 13 55.68	15.26	0.17	5 53 52.4	113.9	2.5	6.5
26	11 19 58.87	15.01	0.17	5 8 21.8	113.6	2.5	6.5
27	11 25 56.12	14.76	0.16	4 22 58.7	113.3	2.5	6.6
28	11 31 47.62	14.53	0.16	3 37		2.5	6.6
29	11 37 33.62	14.30	0.16	2 5		2.5	
30	11 43 14.26	14.08	0.16	2			
31	11 48 49.75	13.87	0.16	1			
32	11 54 20.23	+13.67	0.17	N. 1			

SEPTEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	11 54 4 ^h 11 ^m	N. 0 41 31 ^o 4 ["]	0 ^o 1000105	1 10 ^h 8 ^m	225 37 30 ^o 5 ["]	N. 0 7 17 ^o 7 ["]	9 ^o 65 ["]
2	11 59 29 ^h 62 ^m	S. 0 2 14 ^o 2 ["]	0 ^o 966312	1 12 ^h 3 ^m	228 31 47 ^o 9 ["]	S. 0 14 7 ^o 0 ["]	65 ["]
3	12 4 50 ^h 40 ^m	0 45 36 ^o 2 ["]	0 ^o 931087	1 13 ^h 7 ^m	231 24 6 ^o 3 ["]	0 35 14 ^o 9 ["]	65 ["]
4	12 10 6 ^h 57 ^m	1 28 32 ^o 8 ["]	0 ^o 894416	1 15 ^h 0 ^m	234 14 40 ^o 6 ["]	0 56 4 ^o 4 ["]	66 ["]
5	12 15 18 ^h 19 ^m	2 11 1 ^o 9 ["]	0 ^o 856280	1 16 ^h 3 ^m	237 3 44 ^o 7 ["]	1 16 34 ^o 7 ["]	66 ["]
6	12 20 25 ^h 34 ^m	2 53 1 ^o 6 ["]	0 ^o 816660	1 17 ^h 4 ^m	239 51 32 ^o 6 ["]	1 36 44 ^o 5 ["]	66 ["]
7	12 25 28 ^h 05 ^m	3 34 29 ^o 8 ["]	0 ^o 775532	1 18 ^h 5 ^m	242 38 17 ^o 6 ["]	1 56 32 ^o 5 ["]	66 ["]
8	12 30 26 ^h 33 ^m	4 15 24 ^o 6 ["]	0 ^o 732864	1 19 ^h 6 ^m	245 24 12 ^o 2 ["]	2 15 58 ^o 0 ["]	66 ["]
9	12 35 20 ^h 17 ^m	4 55 44 ^o 0 ["]	0 ^o 688628	1 20 ^h 5 ^m	248 9 29 ^o 2 ["]	2 34 59 ^o 6 ["]	66 ["]
10	12 40 9 ^h 56 ^m	5 35 25 ^o 7 ["]	0 ^o 642781	1 21 ^h 4 ^m	250 54 21 ^o 5 ["]	2 53 36 ^o 5 ["]	66 ["]
11	12 44 54 ^h 42 ^m	6 14 27 ^o 9 ["]	0 ^o 595287	1 22 ^h 2 ^m	253 39 1 ^o 4 ["]	3 11 47 ^o 4 ["]	66 ["]
12	12 49 34 ^h 65 ^m	6 52 48 ^o 1 ["]	0 ^o 546101	1 22 ^h 9 ^m	256 23 41 ^o 0 ["]	3 29 31 ^o 4 ["]	66 ["]
13	12 54 10 ^h 14 ^m	7 30 24 ^o 1 ["]	0 ^o 495177	1 23 ^h 5 ^m	259 8 32 ^o 4 ["]	3 46 47 ^o 0 ["]	66 ["]
14	12 58 40 ^h 71 ^m	8 7 13 ^o 6 ["]	0 ^o 442459	1 24 ^h 1 ^m	261 53 48 ^o 7 ["]	4 3 33 ^o 4 ["]	66 ["]
15	13 3 6 ^h 17 ^m	8 43 13 ^o 7 ["]	0 ^o 387907	1 24 ^h 6 ^m	264 39 41 ^o 0 ["]	4 19 48 ^o 9 ["]	66 ["]
16	13 7 26 ^h 27 ^m	9 18 21 ^o 9 ["]	0 ^o 331464	1 25 ^h 0 ^m	267 26 21 ^o 9 ["]	4 35 32 ^o 1 ["]	66 ["]
17	13 11 40 ^h 73 ^m	9 52 35 ^o 1 ["]	0 ^o 273074	1 25 ^h 3 ^m	270 14 4 ^o 4 ["]	4 50 41 ^o 4 ["]	66 ["]
18	13 15 49 ^h 21 ^m	10 25 50 ^o 2 ["]	0 ^o 212683	1 25 ^h 5 ^m	273 3 0 ^o 9 ["]	5 5 14 ^o 9 ["]	66 ["]
19	13 19 51 ^h 26 ^m	10 58 3 ^o 4 ["]	0 ^o 150238	1 25 ^h 6 ^m	275 53 24 ^o 4 ["]	5 19 10 ^o 8 ["]	66 ["]
20	13 23 46 ^h 47 ^m	11 29 11 ^o 4 ["]	0 ^o 085689	1 25 ^h 5 ^m	278 45 28 ^o 4 ["]	5 32 26 ^o 8 ["]	66 ["]
21	13 27 34 ^h 33 ^m	11 59 9 ^o 7 ["]	0 ^o 0018985	1 25 ^h 4 ^m	281 39 26 ^o 2 ["]	5 45 0 ^o 5 ["]	66 ["]
22	13 31 14 ^h 18 ^m	12 27 53 ^o 8 ["]	9 ^o 9950093	1 25 ^h 1 ^m	284 35 31 ^o 6 ["]	5 56 49 ^o 2 ["]	66 ["]
23	13 34 45 ^h 37 ^m	12 55 19 ^o 1 ["]	9 ^o 878964	1 24 ^h 7 ^m	287 33 59 ^o 7 ["]	6 7 50 ^o 2 ["]	66 ["]
24	13 38 7 ^h 13 ^m	13 21 19 ^o 4 ["]	9 ^o 805587	1 24 ^h 1 ^m	290 35 5 ^o 0 ["]	6 18 0 ^o 1 ["]	66 ["]
25	13 41 18 ^h 59 ^m	13 45 49 ^o 0 ["]	9 ^o 729944	1 23 ^h 3 ^m	293 39 3 ^o 4 ["]	6 27 15 ^o 5 ["]	66 ["]
26	13 44 18 ^h 77 ^m	14 8 41 ^o 1 ["]	9 ^o 652053	1 22 ^h 4 ^m	296 46 10 ^o 7 ["]	6 35 32 ^o 4 ["]	66 ["]
27	13 47 6 ^h 63 ^m	14 29 48 ^o 1 ["]	9 ^o 571945	1 21 ^h 2 ^m	299 56 44 ^o 2 ["]	6 42 46 ^o 5 ["]	66 ["]
28	13 49 40 ^h 96 ^m	14 49 1 ^o 5 ["]	9 ^o 489690	1 19 ^h 8 ^m	303 11 0 ^o 4 ["]	6 48 53 ^o 2 ["]	66 ["]
29	13 52 0 ^h 46 ^m	15 6 12 ^o 5 ["]	9 ^o 405400	1 18 ^h 2 ^m	306 29 18 ^o 0 ["]	6 53 47 ^o 3 ["]	66 ["]
30	13 54 3 ^h 73 ^m	15 21 10 ^o 4 ["]	9 ^o 319230	1 16 ^h 3 ^m	309 51 55 ^o 8 ["]	6 57 23 ^o 3 ["]	66 ["]
31	13 55 49 ^h 24 ^m	S. 15 33 43 ^o 9 ["]	9 ^o 231402	1 14 ^h 1 ^m	313 19 13 ^o 4 ["]	S. 6 59 35 ^o 19 ["]	66 ["]

SEPTEMBER, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 11 54 20.23	+ 13.67	0.17	N. 0 39 21.7	- 109.9	2.6	6.8
2	11 59 45.83	13.47	0.17	S. 0 4 25.4	109.0	2.6	6.9
3	12 5 6.69	13.27	0.17	0 47 48.7	108.0	2.6	6.9
4	12 10 22.91	13.08	0.17	1 30 46.3	106.8	2.6	7.0
5	12 15 34.57	12.89	0.18	2 13 16.0	105.6	2.7	7.1
6	12 20 41.73	12.71	0.18	2 55 16.2	104.3	2.7	7.1
7	12 25 44.43	12.52	0.18	3 36 44.6	103.0	2.7	7.2
8	12 30 42.68	12.33	0.18	4 17 39.2	101.5	2.8	7.3
9	12 35 36.47	12.15	0.18	4 57 58.2	100.0	2.8	7.3
10	12 40 25.78	11.96	0.18	5 37 39.2	98.4	2.8	7.4
11	12 45 10.54	11.77	0.19	6 16 40.4	96.7	2.8	7.5
12	12 49 50.64	11.57	0.19	6 54 59.2	94.9	2.9	7.6
13	12 54 25.98	11.37	0.19	7 32 33.6	93.0	2.9	7.7
14	12 58 56.36	11.16	0.19	8 9 21.2	91.0	2.9	7.7
15	13 3 21.60	10.94	0.19	8 45 19.0	88.8	2.9	7.8
16	13 7 41.45	10.71	0.20	9 20 24.7	86.6	3.0	8.0
17	13 11 55.62	10.47	0.21	9 54 35.0	84.2	3.1	8.1
18	13 16 3.76	10.21	0.21	10 27 46.8	81.7	3.1	8.2
19	13 20 5.43	9.93	0.21	10 59 56.3	79.1	3.1	8.3
20	13 24 0.22	9.63	0.22	11 31 0.2	76.2	3.2	8.4
21	13 27 47.59	9.31	0.22	12 0 54.0	73.2	3.2	8.6
22	13 31 26.91	8.96	0.22	12 29 33.2	70.0	3.3	8.7
23	13 34 57.51	8.58	0.23	12 56 53.2	66.6	3.4	8.9
24	13 38 18.61	8.17	0.23	13 22 47.8	62.9	3.4	9.0
25	13 41 29.33	7.72	0.24	13 47 11.1	59.0	3.4	9.1
26	13 44 28.72	7.22	0.24	14 9 56.5	54.7	3.5	9.3
27	13 47 15.70	6.68	0.25	14 30 56.2	50.2	3.6	9.5
28	13 49 49.09	6.09	0.26	14 50 1.9	45.2	3.7	9.7
29	13 52 7.58	5.44	0.26	15 7 4.8	39.9	3.7	9.8
30	13 54 9.78	4.73	0.26	15 21 54.1	34.1	3.8	10.0
31	13 55 54.17	+ 3.96	0.27	S. 15 34 18.6	- 27.8	3.9	10.3

OCTOBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad. V
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	13 55 49.24	S. 15 33 43.99	.9231402	1 14.1	313 19 13.4	S. 6 59 35.19	.6189
2	13 57 15.39	15 43 40.8	.9142210	1 11.6	316 51 30.6	7 0 16.2	.6135
3	13 58 20.49	15 50 47.6	.9052041	1 8.7	320 29 8.9	6 59 19.5	.6081
4	13 59 2.83	15 54 49.5	.8961407	1 5.5	324 12 29.2	6 56 37.5	.6024
5	13 59 20.69	15 55 31.2	.8870927	1 1.8	328 1 53.9	6 52 2.3	.5964
6	13 59 12.45	15 52 36.6	.8781383	0 57.7	331 57 45.2	6 45 25.7	.5902
7	13 58 36.69	15 45 50.0	.8693713	0 53.2	336 0 25.8	6 36 38.9	.5838
8	13 57 32.23	15 34 55.7	.8609056	0 48.1	340 10 18.2	6 25 33.4	.5772
9	13 55 58.35	15 19 40.2	.8528737	0 42.6	344 27 44.0	6 12 0.6	.5705
10	13 53 54.95	14 59 53.3	.8454271	0 36.7	348 53 4.7	5 55 52.0	.5636
11	13 51 22.66	14 35 29.2	.8387352	0 30.2	353 26 40.1	5 37 0.1	.5561
12	13 48 23.08	14 6 29.1	.8329798	0 23.3	358 8 48.4	5 15 18.3	.5491
13	13 44 58.91	13 33 3.8	.8283509	0 16.0	2 59 43.9	4 50 41.7	.5422
14	13 41 14.00	12 55 34.4	.8250355	0 8.3	7 59 38.9	4 23 7.4	.5356
15	13 37 13.39	12 14 34.6	.8232053	0 0.4	13 8 40.3	3 52 35.7	.5295
16	13 33 3.28	11 30 50.9	.8230047	23 44.2	18 26 48.6	3 19 10.3	.5238
17	13 28 50.59	10 45 21.1	.8245378	23 36.2	23 53 59.9	2 42 59.0	.5185
18	13 24 42.87	9 59 13.2	.8278543	23 28.4	29 29 59.8	2 4 15.4	.5136
19	13 20 47.75	9 13 39.9	.8329454	23 20.9	35 14 26.4	1 23 17.5	.5091
20	13 17 12.50	8 29 55.1	.8397394	23 13.8	41 6 48.5	S. 0 40 30.0	.5050
21	13 14 3.65	7 49 8.7	.8481073	23 7.3	47 6 23.1	N. 0 33 6.8	.4911
22	13 11 26.63	7 12 22.3	.8578713	23 1.3	53 12 16.9	0 48 27.7	.4875
23	13 9 25.54	6 40 25.3	.8688187	22 56.0	59 23 26.6	1 33 22.3	.4844
24	13 8 3.09	6 13 54.0	.8807174	22 51.3	65 38 39.8	2 17 38.2	.4817
25	13 7 20.63	5 53 10.6	.8933297	22 47.3	71 56 35.3	3 0 31.3	.4794
26	13 7 18.25	5 38 24.1	.9064242	22 44.0	78 15 46.3	3 41 18.4	.4774
27	13 7 55.03	5 29 31.9	.9197876	22 41.2	84 34 42.4	4 19 19.8	.4757
28	13 9 9.16	5 26 22.4	.9332307	22 39.1	90 51 53.3	4 54 0.3	.4743
29	13 10 58.33	5 28 36.8	.9465891	22 37.5	97 5 49.4	5 24 51.5	.4731
30	13 13 19.76	5 35 51.5	.9597293	22 36.4	103 15 8.8	5 51 32.3	.4721
31	13 16 10.52	5 47 39.2	.9725451	22 35.7	109 18 37.0	6 13 50.0	.4712
32	13 19 27.64	S. 6 33 2.2	.9849529	22 35.4	115 15 7.1	N. 6 31 39.1	.4705

OCTOBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
13 55 54.17	+ 3.96	0.27	S. 15 34 18.6	- 27.8	3.9	10.3
13 57 19.15	3.11	0.27	15 44 6.2	21.0	4.0	10.5
13 58 23.05	2.20	0.27	15 51 3.5	13.6	4.0	10.7
13 59 4.20	1.22	0.28	15 54 55.9	- 5.6	4.1	10.9
13 59 20.91	+ 0.16	0.29	15 55 28.3	+ 3.0	4.2	11.1
13 59 11.58	- 0.95	0.30	15 52 24.9	12.4	4.3	11.4
13 58 34.84	2.12	0.30	15 45 30.3	22.3	4.4	11.6
13 57 29.57	3.33	0.31	15 34 29.3	32.9	4.5	11.8
13 55 55.12	4.55	0.31	15 19 9.0	43.9	4.6	12.1
13 53 51.42	5.76	0.31	14 59 19.5	55.3	4.6	12.3
13 51 19.16	6.92	0.32	14 34 55.6	66.6	4.7	12.4
13 48 19.96	7.99	0.33	14 5 58.7	77.9	4.8	12.6
13 44 56.50	8.93	0.33	13 32 40.0	88.5	4.8	12.7
13 41 12.63	9.67	0.33	12 55 20.7	97.9	4.8	12.8
13 37 13.32	10.21	0.34	12 14 33.8	105.7	4.9	12.9
¹³ 33 4.41	^{10.47}	^{0.34}	^{12 45 51.1}	^{114.1}	^{4.8}	^{12.7}
13 24 46.89	10.06	0.32	9 59 58.9	114.5	4.8	12.7
13 20 52.74	9.40	0.32	9 14 39.1	111.6	4.8	12.6
13 17 18.04	8.45	0.31	8 31 4.4	105.8	4.7	12.4
13 14 9.26	7.25	0.30	7 50 23.9	97.2	4.6	12.2
13 11 31.78	5.85	0.30	7 13 38.5	86.3	4.5	11.9
13 9 29.74	4.30	0.30	6 41 37.4	73.6	4.4	11.6
13 8 5.91	2.67	0.29	6 14 57.5	59.6	4.3	11.3
13 7 21.74	- 1.01	0.28	5 54 1.8	45.0	4.2	11.0
13 7 17.42	+ 0.64	0.27	5 39 0.2	30.2	4.0	10.7
13 7 52.13	2.24	0.26	5 29 51.3	15.7	3.9	10.3
13 9 4.17	3.75	0.25	5 26 24.2	+ 1.7	3.8	10.0
13 10 51.30	5.16	0.25	5 28 21.0	- 11.3	3.7	9.7
13 13 10.80	6.45	0.24	5 35 18.9	23.3	3.5	9.4
13 15 59.83	7.62	0.23	5 46 50.9	34.2	3.4	9.1
13 19 15.41	8.66	0.22	6 2 29.9	43.9	3.3	8.9
13 22 54.62	+ 9.59	0.22	S. 6 21 47.7	- 52.4	3.2	8.6

NOVEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Lo Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	13 19 27.64	S. 6 3 32.2	9.9849529	22 35.4	115 15 7.1	N.6 31 39.1	9.503
2	13 23 8.19	6 23 2.0	9.9968942	22 35.4	121 3 44.9	6 45 1.6	.511
3	13 27 9.43	6 45 40.9	0.0083288	22 35.8	126 43 47.9	6 54 5.6	.516
4	13 31 28.80	7 11 2.7	.0192331	22 36.4	132 14 43.8	6 59 3.8	.523
5	13 36 3.97	7 38 42.7	.0295956	22 37.3	137 36 12.4	7 0 12.7	.529
6	13 40 52.82	8 8 18.5	.0394146	22 38.4	142 48 2.8	6 57 51.1	.536
7	13 45 53.56	8 39 29.5	.0486982	22 39.6	147 50 13.6	6 52 19.1	.543
8	13 51 4.57	9 11 57.3	.0574573	22 41.0	152 42 49.5	6 43 57.0	.549
9	13 56 24.44	9 45 25.6	.0657088	22 42.5	157 26 2.8	6 33 5.0	.556
10	14 1 52.00	10 19 39.7	.0734715	22 44.1	162 0 9.1	6 20 2.4	.563
11	14 7 26.23	10 54 26.6	.0807657	22 45.8	166 25 28.5	6 5 7.0	.570
12	14 13 6.25	11 29 34.7	.0876132	22 47.6	170 42 24.2	5 48 35.8	.577
13	14 18 51.37	12 4 54.4	.0940350	22 49.5	174 51 19.7	5 30 43.9	.583
14	14 24 40.97	12 40 16.5	.1000523	22 51.5	178 52 40.9	5 11 44.4	.590
15	14 30 34.53	13 15 33.4	.1056855	22 53.5	182 46 53.4	4 51 50.0	.596
16	14 36 31.67	13 50 38.2	.1109542	22 55.5	186 34 23.2	4 31 11.1	.603
17	14 42 32.03	14 25 24.7	.1158773	22 57.6	190 15 35.8	4 9 57.1	.608
18	14 48 35.34	14 59 47.8	.1204720	22 59.8	193 50 56.3	3 48 16.3	.613
19	14 54 41.39	15 33 42.5	.1247547	23 2.0	197 20 48.8	3 26 15.9	.619
20	15 0 49.97	16 7 4.8	.1287415	23 4.2	200 45 36.9	3 4 2.0	.624
21	15 7 0.97	16 39 50.6	.1324456	23 6.5	204 5 43.2	2 41 40.1	.628
22	15 13 14.25	17 11 56.7	.1358807	23 8.8	207 21 28.9	2 19 14.6	.633
23	15 19 29.76	17 43 20.1	.1390588	23 11.2	210 33 15.2	1 56 49.5	.637
24	15 25 47.41	18 13 57.7	.1419912	23 13.6	213 41 21.6	1 34 28.4	.641
25	15 32 7.15	18 43 47.2	.1446875	23 16.0	216 46 6.9	1 12 14.2	.645
26	15 38 28.98	19 12 45.9	.1471576	23 18.5	219 47 49.1	0 50 9.4	.648
27	15 44 52.83	19 40 51.9	.1494095	23 21.0	222 46 45.4	0 28 16.3	.651
28	15 51 18.72	20 8 2.8	.1514509	23 23.5	225 43 12.2	N.0 6 36.9	.654
29	15 57 46.62	20 34 17.0	.1532887	23 26.0	228 37 25.6	S.0 14 47.3	.657
30	16 4 16.53	20 59 32.4	.1549295	23 28.6	231 29 40.5	0 35 54.5	.659
31	16 10 48.45	S.21 23 47.4	0.1563781	23 31.3	234 20 11.8	S.0 56 43.6	9.66

MERCURY.

273

NOVEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
13 22 54.62	+ 9.59	0.22	S. 6 21 47.7	-52.4	3.2	8.6
13 26 54.72	10.40	0.21	6 44 16.2	59.8	3.2	8.4
13 31 13.16	11.12	0.21	7 9 29.5	66.1	3.1	8.2
13 35 47.59	11.74	0.20	7 37 2.9	71.5	3.0	8.0
13 40 35.88	12.28	0.20	8 6 33.6	75.9	2.9	7.8
13 45 36.21	12.74	0.19	8 37 41.1	79.6	2.9	7.7
13 50 46.94	13.14	0.19	9 10 6.7	82.4	2.8	7.5
13 56 6.66	13.49	0.19	9 43 34.0	84.7	2.8	7.4
14 1 34.18	13.79	0.18	10 17 48.1	86.4	2.7	7.2
14 7 8.46	14.06	0.18	10 52 35.9	87.5	2.7	7.1
14 12 48.61	14.29	0.18	11 27 45.7	88.2	2.6	7.0
14 18 33.92	14.49	0.18	12 3 7.7	88.5	2.6	6.9
14 24 23.77	14.66	0.18	12 38 32.6	88.6	2.6	6.8
14 30 17.61	14.82	0.18	13 13 52.8	88.1	2.5	6.7
14 36 15.09	14.97	0.18	13 49 1.3	87.5	2.5	6.7
14 42 15.83	15.09	0.18	14 23 51.7	86.6	2.5	6.6
14 48 19.55	15.21	0.18	14 58 19.0	85.6	2.5	6.5
14 54 26.04	15.32	0.17	15 32 18.0	84.3	2.4	6.4
15 0 35.08	15.43	0.17	16 5 44.9	82.9	2.4	6.4
15 6 46.57	15.53	0.17	16 38 35.2	81.3	2.4	6.3
15 13 0.35	15.62	0.17	17 10 45.9	79.6	2.4	6.3
15 19 16.38	15.71	0.16	17 42 14.0	77.7	2.3	6.2
15 25 34.58	15.80	0.16	18 12 56.2	75.8	2.3	6.2
15 31 54.88	15.89	0.16	18 42 50.3	73.7	2.3	6.1
15 38 17.29	15.98	0.16	19 12 53.6	71.6	2.3	6.1
15 44 41.73	16.06	0.16	19 41 4.1	69.3	2.3	6.1
15 51 8.23	16.15	0.16	19 19.3	67.0	2.3	6.1
15 57 36.77	16.23	0.15	19 47.8	64.6	2.3	6.0
16 4 7.32	16.32	0.15	19 17.4	62.1	2.3	6.0
16 10 39.90	16.40	0.15	18 46.3	59.5	2.3	6.0
16 17 14.48	+16.48	0.14	18 15.1	-56.8	2.3	6.0

DECEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	L. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	
	h m s	° ' "	°	h m	° ' "	° ' "	
1	16 10 48.45	S. 21 23 47.4	0.1563781	23 31.3	234 20 11.8	S. 0 56 43.6	9.66
2	16 17 22.36	21 47 0.3	.1576398	23 33.9	237 9 13.3	1 17 13.3	.66
3	16 23 58.27	22 9 9.4	.1587182	23 36.6	239 56 58.8	1 37 22.3	.66
4	16 30 36.15	22 30 13.1	.1596174	23 39.3	242 43 41.5	1 57 9.7	.66
5	16 37 16.03	22 50 9.8	.1603406	23 42.1	245 29 34.4	2 16 34.3	.66
6	16 43 57.87	23 8 58.0	.1608895	23 44.9	248 14 50.5	2 35 35.1	.66
7	16 50 41.65	23 26 36.4	.1612667	23 47.7	250 59 42.3	2 54 11.1	.66
8	16 57 27.35	23 43 3.4	.1614730	23 50.6	253 44 21.8	3 12 21.2	.66
9	17 4 14.95	23 58 17.6	.1615095	23 53.5	256 29 1.5	3 30 4.2	.66
10	17 11 4.39	24 12 17.4	.1613763	23 56.4	259 13 53.6	3 47 19.1	.66
11	17 17 55.65	24 25 1.4	.1610729	23 59.3	261 59 10.1	4 4 4.4	.66
12	17 24 48.65	24 36 28.6	.1605992	* *	264 45 3.7	4 20 18.9	.66
13	17 31 43.36	24 46 37.2	.1599532	0 2.3	267 31 46.4	4 36 1.1	.66
14	17 38 39.69	24 55 25.8	.1591333	0 5.3	270 19 31.0	4 51 9.3	.66
15	17 45 37.53	25 2 53.2	.1581368	0 8.4	273 8 30.0	5 5 41.7	.66
16	17 52 36.82	25 8 58.0	.1569604	0 11.4	275 58 56.4	5 19 36.3	.66
17	17 59 37.41	25 13 38.8	.1556006	0 14.5	278 51 3.3	5 32 50.9	.65
18	18 6 39.22	25 16 54.4	.1540530	0 17.6	281 45 4.7	5 45 23.3	.65
19	18 13 42.07	25 18 43.6	.1523125	0 20.7	284 41 14.5	5 57 10.6	.65
20	18 20 45.85	25 19 4.8	.1503738	0 23.8	287 39 47.4	6 8 10.1	.65
21	18 27 50.34	25 17 57.3	.1482299	0 26.9	290 40 58.0	6 18 18.3	.64
22	18 34 55.36	25 15 19.9	.1458739	0 30.1	293 45 2.1	6 27 31.9	.64
23	18 42 0.69	25 11 11.5	.1432975	0 33.2	296 52 15.6	6 35 46.9	.64
24	18 49 6.09	25 5 30.9	.1404922	0 36.4	300 2 55.4	6 42 59.0	.63
25	18 56 11.32	24 58 17.7	.1374479	0 39.5	303 17 19.1	6 49 3.5	.63
26	19 3 16.06	24 49 31.0	.1341540	0 42.7	306 35 44.7	6 53 55.3	.63
27	19 10 20.00	24 39 10.4	.1305989	0 45.8	309 58 31.1	6 57 28.8	.62
28	19 17 22.77	24 27 15.4	.1267698	0 48.9	313 25 57.8	6 59 37.8	.61
29	19 24 23.96	24 13 45.9	.1226530	0 52.0	316 58 24.9	7 0 15.9	.61
30	19 31 23.13	23 58 42.2	.1182334	0 55.1	320 36 13.5	6 59 16.1	.60
31	19 38 19.76	23 42 4.5	.1134952	0 58.1	324 19 44.9	6 56 30.7	.60
32	19 45 13.29	S. 23 23 53.9	0.1084208	1 1.0	328 9 21.4	S. 6 51 51.9	9.59

MERCURY.

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DECEMBER, 1856.

At Transit over the Meridian of Greenwich.

Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 16 17 14.48	+16.48	0.17	S. 21 46 33.1	-56.9	2.3	6.0
2	16 23 51.08	16.57	0.17	22 8 45.8	54.2	2.3	6.0
3	16 30 29.67	16.65	0.17	22 29 53.1	51.4	2.2	5.9
4	16 37 10.28	16.73	0.16	22 49 53.1	48.6	2.2	5.9
5	16 43 52.87	16.82	0.16	23 8 44.4	45.7	2.2	5.9
6	16 50 37.41	16.90	0.16	23 26 25.7	42.8	2.2	5.9
7	16 57 23.88	16.98	0.16	23 42 55.3	39.7	2.2	5.9
8	17 4 12.28	17.06	0.16	23 58 11.8	36.6	2.2	5.9
9	* * *	*	*	* * *	*	*	*
0	17 11 2.53	17.13	0.16	24 12 13.8	33.5	2.2	5.9
1	17 17 54.62	17.21	0.16	24 24 59.6	30.3	2.2	5.9
2	17 24 48.46	17.28	0.16	24 36 28.4	27.1	2.2	5.9
3	17 31 44.03	17.35	0.16	24 46 38.1	23.7	2.2	5.9
4	17 38 41.23	17.42	0.16	24 55 27.6	20.4	2.2	5.9
5	17 45 39.96	17.48	0.16	25 2 55.5	16.9	2.3	6.0
6	17 52 40.15	17.54	0.17	25 9 0.5	13.5	2.3	6.0
7	17 59 41.65	17.59	0.17	25 13 41.2	9.9	2.3	6.0
8	18 6 44.37	17.64	0.17	25 16 56.2	6.3	2.3	6.0
9	18 13 48.15	17.68	0.17	25 18 44.5	-2.7	2.3	6.0
0	18 20 52.87	17.71	0.17	25 19 4.4	+1.0	2.3	6.1
1	18 27 58.29	17.74	0.17	25 17 55.2	4.8	2.3	6.1
2	18 35 4.25	17.76	0.17	25 15 15.6	8.5	2.3	6.1
3	18 42 10.51	17.76	0.17	6	12.4	2.3	6.2
4	18 49 16.84	17.76	0.17		16.2	2.3	6.2
5	18 56 22.99	17.75	0.17		20.1	2.4	6.3
6	19 3 28.64	17.72	0.17		24.1	2.4	6.3
7	19 10 33.47	17.68	0.17		28.0		6.4
8	19 17 37.11	17.62	0		32.0		6.4
9	19 24 39.14	17.55			35.0		6.5
0	19 31 39.11	17.45			39		6.5
1	19 38 36.51	17.33			43		6
2	19 45 30.73	+17.19					

JANUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Lo Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N
1	15 32 10.19	S. 16 8 45.5	.9202330	20 51.4	156 14 33.9	N. 3 20 58.7	9.85
2	15 36 41.81	16 25 27.5	.9240937	20 52.0	157 52 1.7	3 21 48.7	.85
3	15 41 14.98	16 41 53.5	.9279132	20 52.6	159 29 28.5	3 22 29.0	.85
4	15 45 49.67	16 58 2.5	.9316922	20 53.2	161 6 54.3	3 22 59.5	.85
5	15 50 25.88	17 13 53.7	.9354310	20 53.9	162 44 19.1	3 23 20.3	.85
6	15 55 3.57	17 29 26.2	.9391303	20 54.6	164 21 42.7	3 23 31.3	.85
7	15 59 42.73	17 44 39.1	.9427906	20 55.4	165 59 5.1	3 23 32.5	.85
8	16 4 23.34	17 59 31.5	.9464127	20 56.1	167 36 26.1	3 23 24.0	.85
9	16 9 5.37	18 14 2.5	.9499970	20 56.9	169 13 45.7	3 23 5.7	.85
10	16 13 48.80	18 28 11.5	.9535442	20 57.7	170 51 3.8	3 22 37.6	.85
11	16 18 33.61	18 41 57.5	.9570549	20 58.5	172 28 20.3	3 21 59.9	.85
12	16 23 19.77	18 55 19.8	.9605298	20 59.4	174 5 35.2	3 21 12.5	.85
13	16 28 7.27	19 8 17.6	.9639694	21 0.2	175 42 48.4	3 20 15.5	.85
14	16 32 56.07	19 20 50.2	.9673743	21 1.1	177 19 59.7	3 19 8.9	.85
15	16 37 46.16	19 32 56.9	.9707450	21 2.0	178 57 9.1	3 17 52.8	.85
16	16 42 37.50	19 44 36.9	.9740822	21 3.0	180 34 16.6	3 16 27.3	.85
17	16 47 30.07	19 55 49.6	.9773862	21 3.9	182 11 22.1	3 14 52.4	.85
18	16 52 23.84	20 6 34.3	.9806576	21 4.9	183 48 25.4	3 13 8.3	.85
19	16 57 18.78	20 16 50.3	.9838969	21 5.9	185 25 26.7	3 11 14.9	.85
20	17 2 14.86	20 26 36.9	.9871044	21 6.9	187 2 25.7	3 9 12.5	.85
21	17 7 12.05	20 35 53.5	.9902805	21 7.9	188 39 22.5	3 7 1.1	.85
22	17 12 10.30	20 44 39.6	.9934256	21 8.9	190 16 16.9	3 4 40.9	.85
23	17 17 9.59	20 52 54.5	.9965399	21 10.0	191 53 9.0	3 2 11.9	.85
24	17 22 9.87	21 0 37.7	.9996238	21 11.1	193 29 58.6	2 59 34.3	.85
25	17 27 11.11	21 7 48.6	.0026774	21 12.2	195 6 45.9	2 56 48.2	.85
26	17 32 13.25	21 14 26.7	.0057011	21 13.3	196 43 30.6	2 53 53.8	.85
27	17 37 16.26	21 20 31.5	.0086951	21 14.4	198 20 12.7	2 50 51.3	.85
28	17 42 20.08	21 26 2.4	.0116596	21 15.6	199 56 52.3	2 47 40.7	.85
29	17 47 24.67	21 30 59.2	.0145949	21 16.7	201 33 29.3	2 44 22.2	.85
30	17 52 29.98	21 35 21.2	.0175013	21 17.9	203 10 3.6	2 40 56.0	.85
31	17 57 35.96	21 39 8.2	.0203791	21 19.0	204 46 35.3	2 37 22.3	.85
32	18 2 42.54	S. 21 42 19.7	.0232286	21 20.2	206 23 4.2	N. 2 33 41.3	9.85

JANUARY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
15 36 6.14	+11.35	0.68	S. 16 23 17.1	-41.5	9.8	10.2
15 40 39.22	11.41	0.68	16 39 45.7	40.8	9.7	10.1
15 45 13.84	11.47	0.67	16 55 57.4	40.1	9.6	10.0
15 49 49.97	11.54	0.67	17 11 51.4	39.4	9.6	10.0
15 54 27.61	11.60	0.66	17 27 26.8	38.6	9.5	9.9
15 59 6.71	11.66	0.66	17 42 42.7	37.8	9.4	9.8
16 3 47.28	11.72	0.65	17 57 38.2	36.9	9.3	9.7
16 8 29.28	11.78	0.65	18 12 12.5	36.0	9.2	9.6
16 13 12.68	11.84	0.65	18 26 24.8	35.0	9.2	9.6
16 17 57.48	11.90	0.64	18 40 14.2	34.1	9.1	9.5
16 22 43.64	11.95	0.64	18 53 40.0	33.1	9.0	9.4
16 27 31.14	12.00	0.63	19 6 41.4	32.1	8.9	9.3
16 32 19.95	12.06	0.62	19 19 17.7	31.0	8.9	9.3
16 37 10.05	12.12	0.62	19 31 28.1	29.9	8.8	9.2
16 42 1.43	12.17	0.62	19 43 11.9	28.8	8.8	9.1
16 46 54.04	12.22	0.61	19 54 28.4	27.6	8.7	9.0
16 51 47.85	12.27	0.61	20 5 17.0	26.4	8.7	9.0
16 56 42.85	12.32	0.61	20 15 36.9	25.2	8.6	8.9
17 1 39.00	12.36	0.60	20 25 27.5	24.0	8.5	8.8
17 6 36.26	12.41	0.60	20 34 48.2	22.7	8.5	8.8
17 11 34.60	12.45	0.60	20 43 38.4	21.4	8.4	8.7
17 16 33.99	12.50	0.60	20 51 57.4	20.1	8.4	8.7
17 21 34.38	12.54	0.59	20 59 44.7	18.8	8.3	8.6
17 26 35.73	12.58	0.59	21 6 59.1	17.4	8.3	8.6
17 31 37.99	12.62	0.59	21 13 44.4	16.1	8.2	8.5
17 36 41.14	12.65	0.58	21 19 51.1	14.7	8.1	8.4
17 41 45.11	12.68	0.58	21 25 26.4	13.3	8.1	8.4
17 46 49.85	12.71	0.57	21 30 42.1	11.8	8.0	8.3
17 51 55.32	12.74	0.57	21 34 52.1	10.4	7.9	8.2
17 57 1.47	12.77	0.57	21 38 48.1	8.9	7.9	8.1
18 2 8.23	12.80	0.56	21 42 12.1	7.4	7.8	8.0
18 7 15.56	+12.82	0.56	S. 21 44 12.1	5.9	7.8	7.9

FEBRUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	I. Ra.
	Noon.	Noon.	Noon.		Noon.	Noon.	
1	18 2 42.54	S. 21 42 19.7	0.0232286	21 20.2	206 23 4.2	N. 2 33 41.3	9.8
2	18 7 49.67	21 44 55.5	0.0260500	21 21.4	207 59 30.5	2 29 53.0	8.8
3	18 12 57.29	21 46 55.2	0.0288437	21 22.6	209 35 54.0	2 25 57.9	8.8
4	18 18 5.35	21 48 18.6	0.0316100	21 23.8	211 12 14.8	2 21 55.9	8.8
5	18 23 13.78	21 49 5.5	0.0343493	21 25.0	212 48 32.9	2 17 47.4	8.8
6	18 28 22.53	21 49 15.6	0.0370619	21 26.2	214 24 48.2	2 13 32.4	8.8
7	18 33 31.54	21 48 48.8	0.0397483	21 27.4	216 1 0.8	2 9 11.3	8.8
8	18 38 40.76	21 47 44.9	0.0424089	21 28.6	217 37 10.6	2 4 44.2	8.8
9	18 43 50.14	21 46 3.9	0.0450440	21 29.8	219 13 17.7	2 0 11.4	8.8
10	18 48 59.61	21 43 45.6	0.0476541	21 31.0	220 49 22.0	1 55 33.1	8.8
11	18 54 9.13	21 40 50.1	0.0502395	21 32.3	222 25 23.6	1 50 49.4	8.8
12	18 59 18.64	21 37 17.4	0.0528006	21 33.5	224 1 22.6	1 46 0.7	8.8
13	19 4 28.08	21 33 7.4	0.0553379	21 34.7	225 37 18.8	1 41 7.1	8.8
14	19 9 37.42	21 28 20.2	0.0578516	21 35.9	227 13 12.4	1 36 9.0	8.8
15	19 14 46.59	21 22 55.9	0.0603421	21 37.1	228 49 3.4	1 31 6.4	8.8
16	19 19 55.55	21 16 54.6	0.0628098	21 38.3	230 24 51.8	1 25 59.7	8.8
17	19 25 4.26	21 10 16.3	0.0652548	21 39.5	232 0 37.6	1 20 49.1	8.8
18	19 30 12.67	21 3 1.4	0.0676775	21 40.7	233 36 20.9	1 15 34.9	8.8
19	19 35 20.73	20 55 9.8	0.0700780	21 41.9	235 12 1.7	1 10 17.3	8.8
20	19 40 28.40	20 46 41.9	0.0724566	21 43.1	236 47 40.0	1 4 56.5	8.8
21	19 45 35.65	20 37 37.8	0.0748135	21 44.2	238 23 15.9	0 59 32.9	8.8
22	19 50 42.42	20 27 57.8	0.0771488	21 45.4	239 58 49.5	0 54 6.6	8.8
23	19 55 48.69	20 17 42.2	0.0794626	21 46.6	241 34 20.7	0 48 37.9	8.8
24	20 0 54.41	20 6 51.3	0.0817552	21 47.7	243 9 49.6	0 43 7.1	8.8
25	20 5 59.55	19 55 25.4	0.0840265	21 48.9	244 45 16.4	0 37 34.4	8.8
26	20 11 4.08	19 43 24.8	0.0862769	21 50.0	246 20 40.9	0 32 0.1	8.8
27	20 16 7.95	19 30 50.0	0.0885062	21 51.1	247 56 3.4	0 26 24.4	8.8
28	20 21 11.14	19 17 41.3	0.0907147	21 52.2	249 31 23.7	0 20 47.6	8.8
29	20 26 13.61	19 3 59.1	0.0929024	21 53.3	251 6 42.1	0 15 10.0	8.8
30	20 31 15.33	S. 18 49 43.9	0.0950696	21 54.3	252 41 58.6	N. 0 9 31.8	9.8

FEBRUARY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
18 7 15 ^s .56	+12 ^s .82	0 ^s .56	S. 21 44 40 ^o .0	- 5 ^o .9	7 ^o .8	8 ^o .1
18 12 23 ^s .38	12 ^s .84	0 ^s .55	21 46 43 ^o .8	4 ^o .4	7 ^o .7	8 ^o .0
18 17 31 ^s .65	12 ^s .85	0 ^s .55	21 48 11 ^o .3	2 ^o .9	7 ^o .7	8 ^o .0
18 22 40 ^s .30	12 ^s .87	0 ^s .55	21 49 2 ^o .2	- 1 ^o .4	7 ^o .6	7 ^o .9
18 27 49 ^s .28	12 ^s .88	0 ^s .55	21 49 16 ^o .3	+ 0 ^o .2	7 ^o .6	7 ^o .9
18 32 58 ^s .52	12 ^s .89	0 ^s .54	21 48 53 ^o .5	1 ^o .7	7 ^o .5	7 ^o .8
18 38 7 ^s .99	12 ^s .90	0 ^s .54	21 47 53 ^o .5	3 ^o .3	7 ^o .5	7 ^o .8
18 43 17 ^s .61	12 ^s .90	0 ^s .53	21 46 16 ^o .2	4 ^o .8	7 ^o .4	7 ^o .7
18 48 27 ^s .34	12 ^s .91	0 ^s .53	21 44 1 ^o .8	6 ^o .4	7 ^o .4	7 ^o .7
18 53 37 ^s .11	12 ^s .91	0 ^s .52	21 41 10 ^o .0	7 ^o .9	7 ^o .3	7 ^o .6
18 58 46 ^s .88	12 ^s .91	0 ^s .52	21 37 40 ^o .9	9 ^o .4	7 ^o .3	7 ^o .6
19 3 56 ^s .60	12 ^s .90	0 ^s .52	21 33 34 ^o .5	11 ^o .0	7 ^o .2	7 ^o .5
19 9 6 ^s .21	12 ^s .90	0 ^s .51	21 28 50 ^o .9	12 ^o .6	7 ^o .2	7 ^o .5
19 14 15 ^s .66	12 ^s .89	0 ^s .51	21 23 30 ^o .0	14 ^o .1	7 ^o .2	7 ^o .5
19 19 24 ^s .91	12 ^s .88	0 ^s .50	21 17 32 ^o .1	15 ^o .7	7 ^o .1	7 ^o .4
19 24 33 ^s .90	12 ^s .87	0 ^s .50	21 10 57 ^o .2	17 ^o .2	7 ^o .1	7 ^o .4
19 29 42 ^s .60	12 ^s .85	0 ^s .50	21 3 45 ^o .4	18 ^o .8	7 ^o .0	7 ^o .3
19 34 50 ^s .95	12 ^s .84	0 ^s .50	20 55 57 ^o .0	20 ^o .3	7 ^o .0	7 ^o .3
19 39 58 ^s .91	12 ^s .82	0 ^s .49	20 47 32 ^o .2	21 ^o .8	6 ^o .9	7 ^o .2
19 45 6 ^s .45	12 ^s .80	0 ^s .49	20 38 31 ^o .1	23 ^o .3	6 ^o .9	7 ^o .2
19 50 13 ^s .52	12 ^s .78	0 ^s .49	20 28 54 ^o .0	24 ^o .8	6 ^o .9	7 ^o .2
19 55 20 ^s .09	12 ^s .76	0 ^s .48	20 18 41 ^o .3	26 ^o .3	6 ^o .8	7 ^o .1
20 0 26 ^s .11	12 ^s .74	0 ^s .48	20 7 53 ^o .1	27 ^o .8	6 ^o .8	7 ^o .1
20 5 31 ^s .55	12 ^s .71	0 ^s .48	19 56 29 ^o .9	29 ^o .2	6 ^o .8	7 ^o .1
20 10 36 ^s .37	12 ^s .69	0 ^s .47	19 44 31 ^o .9	30 ^o .7	6 ^o .7	7 ^o .0
20 15 40 ^s .54	12 ^s .66	0 ^s .47	19 31 59 ^o .6	32 ^o .1	6 ^o .7	7 ^o .0
20 20 44 ^s .02	12 ^s .63	0 ^s .47	19 18 53 ^o .3	33 ^o .5	6 ^o .7	7 ^o .0
20 25 46 ^s .79	12 ^s .60	0 ^s .46	19 5 13 ^o .4	34 ^o .9	6 ^o .6	6 ^o .9
20 30 48 ^s .80	12 ^s .57	0 ^s .46	18 51 0 ^o .5	36 ^o .3	6 ^o .6	6 ^o .9
20 35 50 ^s .04	+12 ^s .53	0 ^s .46	S. 18 36 15 ^o .0	+37 ^o .6	6 ^o .6	6 ^o .9

MARCH, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
	h m s	° ' "		h m	° ' "	° ' "	
1	20 31 15.33	S. 18 49 43.9	0.0950696	21 54.3	252 41 58.6	N. 0 9 31.8	9.86
2	20 36 16.27	18 34 56.2	.0972163	21 55.4	254 17 13.2	N. 0 3 53.2	.86
3	20 41 16.41	18 19 36.4	.0993428	21 56.5	255 52 26.0	S. 0 1 45.4	.86
4	20 46 15.71	18 3 45.1	.1014491	21 57.5	257 27 37.0	0 7 23.9	.86
5	20 51 14.17	17 47 22.9	.1035356	21 58.5	259 2 46.4	0 13 1.9	.86
6	20 56 11.75	17 30 30.1	.1056024	21 59.5	260 37 54.2	0 18 39.2	.86
7	21 1 8.45	17 13 7.4	.1076497	22 0.5	262 13 0.5	0 24 15.6	.86
8	21 6 4.25	16 55 15.5	.1096777	22 1.5	263 48 5.3	0 29 50.7	.86
9	21 10 59.13	16 36 54.7	.1116867	22 2.4	265 23 8.8	0 35 24.4	.86
10	21 15 53.09	16 18 5.8	.1136769	22 3.4	266 58 10.9	0 40 56.4	.86
11	21 20 46.12	15 58 49.3	.1156485	22 4.3	268 33 11.8	0 46 26.4	.86
12	21 25 38.22	15 39 5.9	.1176018	22 5.2	270 8 11.6	0 51 54.3	.86
13	21 30 29.39	15 18 56.2	.1195371	22 6.1	271 43 10.3	0 57 19.6	.86
14	21 35 19.62	14 58 20.7	.1214545	22 7.0	273 18 8.0	1 2 42.3	.86
15	21 40 8.92	14 37 20.2	.1233544	22 7.9	274 53 4.8	1 8 2.0	.86
16	21 44 57.30	14 15 55.2	.1252368	22 8.7	276 28 0.7	1 13 18.6	.86
17	21 49 44.76	13 54 6.5	.1271020	22 9.5	278 2 55.8	1 18 31.7	.86
18	21 54 31.31	13 31 54.5	.1289501	22 10.4	279 37 50.1	1 23 41.2	.86
19	21 59 16.97	13 9 20.0	.1307812	22 11.2	281 12 43.8	1 28 46.8	.86
20	22 4 1.74	12 46 23.6	.1325954	22 12.0	282 47 36.9	1 33 48.3	.86
21	22 8 45.65	12 23 5.9	.1343928	22 12.7	284 22 29.4	1 38 45.4	.86
22	22 13 28.71	11 59 27.6	.1361735	22 13.5	285 57 21.6	1 43 38.0	.86
23	22 18 10.94	11 35 29.3	.1379376	22 14.3	287 32 13.3	1 48 25.8	.86
24	22 22 52.35	11 11 11.7	.1396850	22 15.0	289 7 4.8	1 53 8.6	.86
25	22 27 32.96	10 46 35.4	.1414159	22 15.7	290 41 56.0	1 57 46.2	.86
26	22 32 12.81	10 21 41.1	.1431302	22 16.4	292 16 47.0	2 2 18.4	.86
27	22 36 51.91	9 56 29.5	.1448280	22 17.1	293 51 38.0	2 6 45.0	.86
28	22 41 30.27	9 31 1.3	.1465092	22 17.8	295 26 28.9	2 11 5.8	.86
29	22 46 7.93	9 5 17.2	.1481739	22 18.5	297 1 19.8	2 15 20.6	.86
30	22 50 44.90	8 39 17.8	.1498221	22 19.1	298 36 10.8	2 19 29.2	.86
31	22 55 21.21	8 13 3.8	.1514538	22 19.8	300 11 2.0	2 23 31.4	.86
32	22 59 56.88	S. 7 46 36.0	0.1530690	22 20.4	301 45 53.4	S. 2 27 27.19	.86

VENUS.

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MARCH, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
m s	s	s	° ′ ″	″	″	″
35 50 ^o 04	+12 ^o 53	0 ^o 46	S. 18 36 15 ^o 0	+37 ^o 6	6 ^o 6	6 ^o 9
40 50 ^o 47	12 ^o 50	0 ^o 45	18 20 57 ^o 3	38 ^o 9	6 ^o 5	6 ^o 8
45 50 ^o 06	12 ^o 46	0 ^o 45	18 5 8 ^o 0	40 ^o 2	6 ^o 5	6 ^o 8
50 48 ^o 81	12 ^o 43	0 ^o 45	17 48 47 ^o 6	41 ^o 5	6 ^o 5	6 ^o 8
55 46 ^o 68	12 ^o 39	0 ^o 45	17 31 56 ^o 7	42 ^o 7	6 ^o 4	6 ^o 7
0 43 ^o 66	12 ^o 36	0 ^o 45	17 14 35 ^o 8	44 ^o 0	6 ^o 4	6 ^o 7
5 39 ^o 73	12 ^o 32	0 ^o 45	16 56 45 ^o 5	45 ^o 2	6 ^o 4	6 ^o 7
10 34 ^o 89	12 ^o 28	0 ^o 44	16 38 26 ^o 4	46 ^o 4	6 ^o 3	6 ^o 6
15 29 ^o 12	12 ^o 24	0 ^o 44	16 19 39 ^o 0	47 ^o 6	6 ^o 3	6 ^o 6
20 22 ^o 42	12 ^o 20	0 ^o 44	16 0 24 ^o 0	48 ^o 7	6 ^o 3	6 ^o 6
25 14 ^o 78	12 ^o 16	0 ^o 43	15 40 42 ^o 0	49 ^o 8	6 ^o 2	6 ^o 5
30 6 ^o 21	12 ^o 12	0 ^o 43	15 20 33 ^o 6	50 ^o 9	6 ^o 2	6 ^o 5
34 56 ^o 70	12 ^o 08	0 ^o 43	14 59 59 ^o 4	52 ^o 0	6 ^o 2	6 ^o 5
39 46 ^o 25	12 ^o 04	0 ^o 43	14 39 0 ^o 0	53 ^o 0	6 ^o 2	6 ^o 5
44 34 ^o 87	12 ^o 00	0 ^o 43	14 17 36 ^o 2	54 ^o 0	6 ^o 2	6 ^o 4
49 22 ^o 57	11 ^o 97	0 ^o 43	13 55 48 ^o 5	55 ^o 0	6 ^o 2	6 ^o 4
54 9 ^o 36	11 ^o 93	0 ^o 43	13 33 37 ^o 5	55 ^o 9	6 ^o 2	6 ^o 4
58 55 ^o 25	11 ^o 90	0 ^o 43	13 11 3 ^o 9	56 ^o 9	6 ^o 2	6 ^o 4
3 40 ^o 25	11 ^o 86	0 ^o 42	12 48 8 ^o 4	57 ^o 8	6 ^o 1	6 ^o 3
8 24 ^o 38	11 ^o 82	0 ^o 42	12 24 51 ^o 5	58 ^o 7	6 ^o 1	6 ^o 3
13 7 ^o 66	11 ^o 79	0 ^o 42	12 1 13 ^o 9	59 ^o 5	6 ^o 1	6 ^o 3
17 50 ^o 09	11 ^o 75	0 ^o 42	11 37 16 ^o 3	60 ^o 3	6 ^o 1	6 ^o 3
22 31 ^o 71	11 ^o 72	0 ^o 42	11 12 59 ^o 3	61 ^o 1	6 ^o 0	6 ^o 2
27 12 ^o 53	11 ^o 68	0 ^o 42	10 48 23 ^o 6	61 ^o 9	6 ^o 0	6 ^o 2
31 52 ^o 57	11 ^o 65	0 ^o 42	10 23 29 ^o 9	62 ^o 6	6 ^o 0	6 ^o 2
36 31 ^o 85	11 ^o 62	0 ^o 41	9 58 18 ^o 8	63 ^o 3	5 ^o 0	
41 10 ^o 40	11 ^o 59	0 ^o 41	9 32 51 ^o 1	64 ^o 0	5 ^o	
45 48 ^o 24	11 ^o 56	0 ^o 40	9 7 7 ^o 3	64 ^o 7		
50 25 ^o 39	11 ^o 53	0 ^o 40	8 41 8 ^o 3	65 ^o 3		
55 1 ^o 88	11 ^o 51	0 ^o 39	8 14 54 ^o 6	65 ^o 9		
59 37 ^o 72	11 ^o 48	0 ^o 39	7 48 27 ^o 0	66 ^o 4		
4 12 ^o 95	+11 ^o 46	0 ^o 39	S. 7 21 46 ^o 1	+67 ^o 0		

APRIL, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	22 59 56.88	S. 7 46 36.0	0.1530690	22 20.4	301 45 53.4	S. 2 27 27.1	9.8622417
2	23 4 31.95	7 19 55.0	.1546679	22 21.1	303 20 45.0	2 31 16.0	.8622513
3	23 9 6.43	6 53 1.5	.1562504	22 21.7	304 55 37.0	2 34 58.0	.8622591
4	23 13 40.36	6 25 56.2	.1578167	22 22.3	306 30 29.3	2 38 32.9	.8622644
5	23 18 13.76	5 58 39.9	.1593668	22 22.9	308 5 22.1	2 42 0.6	.8622673
6	23 22 46.67	5 31 13.2	.1609009	22 23.5	309 40 15.3	2 45 20.9	.8622684
7	23 27 19.11	5 3 36.9	.1624190	22 24.1	311 15 9.0	2 48 33.6	.8622670
8	23 31 51.12	4 35 51.6	.1639213	22 24.7	312 50 3.3	2 51 38.7	.8622633
9	23 36 22.72	4 7 58.0	.1654079	22 25.3	314 24 58.3	2 54 35.9	.8622574
10	23 40 53.95	3 39 56.9	.1668789	22 25.9	315 59 53.9	2 57 25.1	.8622493
11	23 45 24.85	3 11 48.8	.1683346	22 26.4	317 34 50.3	3 0 6.3	.8622389
12	23 49 55.45	2 43 34.5	.1697750	22 27.0	319 9 47.4	3 2 39.3	.8622203
13	23 54 25.79	2 15 14.7	.1712003	22 27.5	320 44 45.4	3 5 3.9	.8622114
14	23 58 55.90	1 46 50.0	.1726105	22 28.1	322 19 44.2	3 7 20.0	.8621943
15	0 3 25.83	1 18 21.1	.1740058	22 28.6	323 54 43.9	3 9 27.6	.8621751
16	0 7 55.61	0 49 48.7	.1753862	22 29.2	325 29 44.4	3 11 26.6	.8621536
17	0 12 25.29	S. 0 21 13.3	.1767519	22 29.7	327 4 46.0	3 13 16.8	.8621300
18	0 16 54.89	N. 0 7 24.2	.1781028	22 30.3	328 39 48.5	3 14 58.2	.8621044
19	0 21 24.47	0 36 3.3	.1794391	22 30.8	330 14 52.0	3 16 30.7	.8620763
20	0 25 54.06	1 4 43.3	.1807607	22 31.4	331 49 56.6	3 17 54.2	.8620463
21	0 30 23.70	1 33 23.5	.1820677	22 32.0	333 25 2.2	3 19 8.6	.8620144
22	0 34 53.43	2 2 3.2	.1833600	22 32.5	335 0 8.9	3 20 13.9	.8619800
23	0 39 23.29	2 30 41.8	.1846375	22 33.1	336 35 16.7	3 21 10.0	.8619438
24	0 43 53.32	2 59 18.6	.1859002	22 33.6	338 10 25.7	3 21 57.0	.8619056
25	0 48 23.57	3 27 52.9	.1871481	22 34.2	339 45 35.8	3 22 34.7	.8618654
26	0 52 54.06	3 56 24.1	.1883811	22 34.8	341 20 47.2	3 23 3.0	.8618233
27	0 57 24.83	4 24 51.4	.1895991	22 35.3	342 55 59.7	3 23 22.1	.8617792
28	1 1 55.92	4 53 14.2	.1908022	22 35.9	344 31 13.5	3 23 31.8	.8617333
29	1 6 27.38	5 21 31.7	.1919902	22 36.5	346 6 28.5	3 23 32.2	.8616855
30	1 10 59.22	5 49 43.3	.1931632	22 37.1	347 41 44.8	3 23 23.3	.8616359
31	1 15 31.49	N. 6 17 48.2	0.1943211	22 37.7	349 17 2.3	S. 3 23 5.0	9.8615845

APRIL, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 23 4 12.95	+11.46	0.39	S. 7 21 46.1	+67.0	5.8	6.0
2	23 8 47.59	11.43	0.39	6 54 52.8	67.5	5.8	6.0
3	23 13 21.68	11.41	0.39	6 27 47.6	67.9	5.8	6.0
4	23 17 55.23	11.39	0.38	6 0 31.3	68.4	5.7	5.9
5	23 22 28.29	11.37	0.38	5 33 4.6	68.8	5.7	5.9
6	23 27 0.87	11.35	0.38	5 5 28.2	69.2	5.7	5.9
7	23 31 33.01	11.33	0.38	4 37 42.8	69.6	5.7	5.9
8	23 36 4.75	11.31	0.38	4 9 49.0	69.9	5.7	5.9
9	23 40 36.12	11.30	0.38	3 41 47.7	70.2	5.6	5.8
10	23 45 7.15	11.29	0.38	3 13 39.4	70.5	5.6	5.8
11	23 49 37.87	11.28	0.38	2 45 24.8	70.7	5.6	5.8
12	23 54 8.33	11.27	0.38	2 17 4.7	70.9	5.6	5.8
13	23 58 38.56	11.26	0.38	1 48 39.6	71.1	5.6	5.8
14	0 3 8.60	11.26	0.37	1 20 10.3	71.3	5.5	5.7
15	0 7 38.50	11.25	0.37	0 51 37.4	71.4	5.5	5.7
16	0 12 8.28	11.24	0.37	S. 0 23 1.6	71.5	5.5	5.7
17	0 16 37.99	11.24	0.37	N. 0 5 36.5	71.6	5.5	5.7
18	0 21 7.67	11.24	0.37	0 34 16.2	71.6	5.5	5.7
19	0 25 37.36	11.24	0.37	1 2 56.7	71.7	5.5	5.7
20	0 30 7.10	11.24	0.37	1 31 37.6	71.7	5.4	5.6
21	0 34 36.93	11.25	0.37	2 0 18.1	71.7	5.4	5.6
22	0 39 6.89	11.25	0.37	2 28 57.4	71.6	5.4	5.6
23	0 43 37.02	11.26	0.37	2 57 35.0	71.5	5.4	5.6
24	0 48 7.35	11.27	0.37	3 26 10.2	71.4	5.4	5.6
25	0 52 37.93	11.28	0.37	3 54 42.2			5.6
26	0 57 8.79	11.30	0.36	4 23 10.5			5.5
27	1 1 39.98	11.31	0.36	4 51 34.2			
28	1 6 11.52	11.33	0.36	5 19 52			
29	1 10 43.45	11.34	0.36	5 48 5			
30	1 15 15.80	11.36	0.36	6 16 1			
31	1 19 48.62	+11.38	0.36	N. 6 44			

MAY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	1 15 31.49	N. 6 17 48.2	0.1943211	22 37.7	349 17 2.3	S. 3 23 5.0	9.8615843
2	1 20 4.22	6 45 45.7	0.1954638	22 38.3	350 52 21.2	3 22 37.3	9.8615313
3	1 24 37.46	7 13 35.2	0.1965914	22 38.9	352 27 41.4	3 22 0.3	9.8614763
4	1 29 11.22	7 41 15.9	0.1977039	22 39.6	354 3 2.9	3 21 14.0	9.8614199
5	1 33 45.55	8 8 47.0	0.1988014	22 40.2	355 38 25.8	3 20 18.4	9.8613611
6	1 38 20.48	8 36 7.9	0.1998838	22 40.9	357 13 50.1	3 19 13.6	9.8613021
7	1 42 56.04	9 3 17.8	0.2009513	22 41.5	358 49 15.7	3 17 59.5	9.8612408
8	1 47 32.26	9 30 16.1	0.2020039	22 42.2	0 24 42.7	3 16 36.3	9.8611780
9	1 52 9.18	9 57 2.0	0.2030416	22 42.9	2 0 11.1	3 15 4.0	9.8611138
10	1 56 46.82	10 23 34.8	0.2040646	22 43.6	3 35 41.0	3 13 22.6	9.8610482
11	2 1 25.21	10 49 53.7	0.2050730	22 44.3	5 11 12.2	3 11 32.3	9.8609812
12	2 6 4.39	11 15 58.1	0.2060667	22 45.0	6 46 44.9	3 9 33.1	9.8609130
13	2 10 44.38	11 41 47.3	0.2070459	22 45.7	8 22 19.0	3 7 25.1	9.8608435
14	2 15 25.22	12 7 20.5	0.2080106	22 46.5	9 57 54.6	3 5 8.4	9.8607728
15	2 20 6.93	12 32 37.1	0.2089609	22 47.3	11 33 31.6	3 2 43.0	9.8607010
16	2 24 49.55	12 57 36.4	0.2098968	22 48.1	13 9 10.0	3 0 9.2	9.8606281
17	2 29 33.09	13 22 17.6	0.2108183	22 48.9	14 44 50.0	2 57 26.9	9.8605542
18	2 34 17.59	13 46 40.1	0.2117256	22 49.7	16 20 31.5	2 54 36.3	9.8604793
19	2 39 3.07	14 10 43.1	0.2126185	22 50.5	17 56 14.4	2 51 37.6	9.8604035
20	2 43 49.56	14 34 25.9	0.2134971	22 51.3	19 31 58.8	2 48 30.9	9.8603269
21	2 48 37.07	14 57 47.9	0.2143613	22 52.2	21 7 44.8	2 45 16.2	9.8602495
22	2 53 25.63	15 20 48.3	0.2152111	22 53.1	22 43 32.3	2 41 53.8	9.8601713
23	2 58 15.25	15 43 26.4	0.2160464	22 54.0	24 19 21.3	2 38 23.8	9.8600925
24	3 3 5.96	16 5 41.5	0.2168671	22 54.9	25 55 11.9	2 34 46.3	9.8600131
25	3 7 57.75	16 27 32.9	0.2176732	22 55.8	27 31 4.0	2 31 1.5	9.8599331
26	3 12 50.65	16 48 59.8	0.2184646	22 56.8	29 6 57.7	2 27 9.6	9.8598526
27	3 17 44.66	17 10 1.6	0.2192411	22 57.8	30 42 53.0	2 23 10.8	9.8597717
28	3 22 39.80	17 30 37.5	0.2200028	22 58.8	32 18 49.8	2 19 5.2	9.8596904
29	3 27 36.07	17 50 46.8	0.2207496	22 59.8	33 54 48.3	2 14 53.0	9.8596088
30	3 32 33.47	18 10 28.8	0.2214814	23 0.8	35 30 48.4	2 10 34.4	9.8595270
31	3 37 32.00	18 29 42.8	0.2221981	23 1.9	37 6 50.1	2 6 9.6	9.8594449
32	3 42 31.66	N. 18 48 28.1	0.2228998	23 2.9	38 42 53.5	S. 2 1 38.8	9.8593628

VENUS.

285

MAY, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	<small>h m s</small>	<small>s</small>	<small>s</small>	<small>° ' "</small>	<small>"</small>	<small>"</small>	<small>"</small>
1	1 19 48.62	+11.38	0.36	N. 6 44 10.1	+69.8	5.3	5.5
2	1 24 21.94	11.40	0.36	7 12 0.7	69.4	5.3	5.5
3	1 28 55.79	11.43	0.35	7 39 42.6	69.0	5.2	5.4
4	1 33 30.21	11.45	0.35	8 7 15.0	68.6	5.2	5.4
5	1 38 5.23	11.48	0.35	8 34 37.2	68.2	5.2	5.4
6	1 42 40.88	11.50	0.35	9 1 48.5	67.7	5.2	5.4
7	1 47 17.19	11.53	0.35	9 28 48.2	67.2	5.2	5.4
8	1 51 54.20	11.55	0.35	9 55 35.5	66.7	5.2	5.4
9	1 56 31.93	11.59	0.35	10 22 9.8	66.1	5.2	5.4
10	2 1 10.42	11.62	0.35	10 48 30.2	65.5	5.2	5.4
11	2 5 49.69	11.65	0.35	11 14 36.2	64.9	5.2	5.4
12	2 10 29.78	11.69	0.35	11 40 27.0	64.3	5.1	5.3
13	2 15 10.71	11.72	0.35	12 6 1.9	63.6	5.1	5.3
14	2 19 52.53	11.76	0.35	12 31 20.1	62.9	5.1	5.3
15	2 24 35.25	11.80	0.35	12 56 21.1	62.2	5.1	5.3
16	2 29 18.90	11.84	0.35	13 21 4.0	61.4	5.1	5.3
17	2 34 3.51	11.88	0.35	13 45 28.2	60.6	5.1	5.3
18	2 38 49.10	11.92	0.35	14 9 33.0	59.7	5.1	5.3
19	2 43 35.70	11.96	0.35	14 33 17.7	58.9	5.0	5.2
20	2 48 23.33	12.00	0.35	14 56 41.5	58.0	5.0	5.2
21	2 53 12.02	12.05	0.35	15 19 43.8	57.1	5.0	5.2
22	2 58 1.77	12.10	0.35	15 42 23.8	56.2	5.0	5.2
23	3 2 52.61	12.15	0.35	16 4 40.8	55.2	5.0	5.2
24	3 7 44.54	12.19	0.35	16 26 34.1	54.2	5.0	5.2
25	3 12 37.58	12.23		16 48 3.0	53.2	5.0	5.2
26	3 17 31.74	12.28		17 9 6.7	52.1	5.0	5.2
27	3 22 27.03	12.32		17 31 44.6	51.0	5.0	5.2
28	3 27 23.45			17 52 1.0	49.9	5.0	5.2
29	3 32 21.01					5.0	5.2
30	3 37 19.71					4.9	5.1
31	3 42 19.54					4.9	5.1
32	3 47 20.50					4.9	5.1

VENUS.

JUNE, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No
1	h m s 3 42 31.66	N. 18 48 28.10	0.2228998	h m 23 2.9	0' 38 42 53.5	S. 2 1 38.8	9.85
2	3 47 32.44	19 6 44.0	.2235863	23 4.0	40 18 58.5	1 57 2.2	.85
3	3 52 34.34	19 24 29.8	.2242577	23 5.1	41 55 5.1	1 52 20.0	.85
4	3 57 37.34	19 41 44.9	.2249140	23 6.3	43 31 13.4	1 47 32.5	.85
5	4 2 41.43	19 58 28.5	.2255552	23 7.4	45 7 23.4	1 42 39.8	.85
6	4 7 46.60	20 14 40.1	.2261814	23 8.6	46 43 35.1	1 37 42.1	.85
7	4 12 52.84	20 30 19.0	.2267926	23 9.8	48 19 48.4	1 32 39.7	.8
8	4 18 0.12	20 45 24.6	.2273889	23 11.0	49 56 3.5	1 27 32.9	.8
9	4 23 8.43	20 59 56.3	.2279702	23 12.2	51 32 20.2	1 22 21.9	.8
10	4 28 17.74	21 13 53.5	.2285367	23 13.4	53 8 38.7	1 17 6.8	.8
11	4 33 28.03	21 27 15.6	.2290884	23 14.6	54 44 58.9	1 11 48.1	.8
12	4 38 39.27	21 40 2.1	.2296253	23 15.9	56 21 20.8	1 6 25.8	.8
13	4 43 51.44	21 52 12.5	.2301476	23 17.2	57 57 44.5	1 1 0.2	.8
14	4 49 4.51	22 3 46.2	.2306553	23 18.5	59 34 10.0	0 55 31.7	.8
15	4 54 18.44	22 14 42.7	.2311485	23 19.8	61 10 37.2	0 50 0.4	.8
16	4 59 33.20	22 25 1.6	.2316272	23 21.1	62 47 6.2	0 44 26.7	.8
17	5 4 48.75	22 34 42.4	.2320914	23 22.4	64 23 37.0	0 38 50.7	.8
18	5 10 5.06	22 43 44.6	.2325411	23 23.8	66 0 9.6	0 33 12.8	.8
19	5 15 22.09	22 52 7.9	.2329762	23 25.1	67 36 43.9	0 27 33.2	.8
20	5 20 39.80	22 59 51.8	.2333967	23 26.5	69 13 20.1	0 21 52.1	.8
21	5 25 58.14	23 6 56.0	.2338026	23 27.8	70 49 58.0	0 16 10.0	.8
22	5 31 17.07	23 13 20.2	.2341939	23 29.2	72 26 37.7	0 10 26.9	.8
23	5 36 36.54	23 19 4.0	.2345705	23 30.6	74 3 19.2	S. 0 4 43.2	.8
24	5 41 56.50	23 24 7.0	.2349323	23 32.0	75 40 2.5	N. 0 1 0.8	.8
25	5 47 16.89	23 28 29.1	.2352793	23 33.4	77 16 47.6	0 6 44.8	.8
26	5 52 37.67	23 32 10.0	.2356114	23 34.8	78 53 34.5	0 12 28.6	.8
27	5 57 58.78	23 35 9.5	.2359285	23 36.3	80 30 23.1	0 18 12.0	.8
28	6 3 20.16	23 37 27.3	.2362305	23 37.7	82 7 13.5	0 23 54.6	.8
29	6 8 41.76	23 39 3.3	.2365175	23 39.1	83 44 5.7	0 29 36.1	.8
30	6 14 3.51	23 39 57.5	.2367894	23 40.5	85 20 59.6	0 35 16.3	.8
31	6 19 25.37	N. 23 40 9.60	0.2370462	23 41.9	86 57 55.3	N. 0 40 54.9	9.8

JUNE, 1856.

At Transit over the Meridian of Greenwich,

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 3 47 20.50	+12.56	s 0.34	° ' " N.19 6 1.1	+45.1	" 4.9	" 5.1
2	3 52 22.58	12.61	0.34	19 23 48.9	43.9	4.9	5.1
3	3 57 25.77	12.65	0.34	19 41 6.0	42.6	4.9	5.1
4	4 2 30.06	12.70	0.34	19 57 51.6	41.3	4.9	5.1
5	4 7 35.44	12.74	0.34	20 14 5.2	39.9	4.9	5.1
6	4 12 41.89	12.79	0.34	20 29 46.0	38.5	4.9	5.1
7	4 17 49.38	12.83	0.34	20 44 53.6	37.1	4.9	5.1
8	4 22 57.91	12.88	0.34	20 59 27.2	35.7	4.9	5.1
9	4 28 7.45	12.92	0.34	21 13 26.2	34.2	4.9	5.1
10	4 33 17.97	12.96	0.34	21 26 50.2	32.8	4.9	5.1
11	4 38 29.45	13.00	0.34	21 39 38.5	31.3	4.9	5.1
12	4 43 41.87	13.03	0.34	21 51 50.7	29.8	4.9	5.1
13	4 48 55.19	13.07	0.34	22 3 26.1	28.2	4.8	5.0
14	4 54 9.37	13.11	0.34	22 14 24.3	26.7	4.8	5.0
15	4 59 24.39	13.14	0.34	22 24 44.8	25.1	4.8	5.0
16	5 4 40.21	13.18	0.35	22 34 27.2	23.5	4.8	5.0
17	5 9 56.79	13.21	0.35	22 43 30.9	21.8	4.8	5.0
18	5 15 14.10	13.23	0.35	22 51 55.7	20.2	4.8	5.0
19	5 20 32.10	13.26	0.35	22 59 41.0	18.6	4.8	5.0
20	5 25 50.73	13.28	0.35	23 6 46.6	16.9	4.8	5.0
21	5 31 9.94	13.31	0.35	23 13 12.0	15.2	4.8	5.0
22	5 36 29.71	13.33	0.35	23 18 57.0	13.5	4.8	5.0
23	5 41 49.96	13.35	0.35	23 24 1.2	11.8	4.8	5.0
24	5 47 10.66	13.37	0.35	23 28 24.4	10.1	4.8	5.0
25	5 52 31.75	13.39	0.35	23 32 6.3	8.4	4.8	5.0
26	5 57 53.16	13.40		23 35 6.6	6.6	4.8	5.0
27	6 3 14.86	13.41		37 25.3	4.9	4.8	5.0
28	6 8 36.77	13.42		39 2.1	3.2	4.8	5.0
29	6 13 58.84	13.42		1 57.0	1.4	4.8	5.0
30	6 19 21.01	13.42		9.7	3	4.8	5.0
31	6 24 43.22	+13.43				4.8	5.0

JULY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad. V.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	6 19 25.37	N. 23 40 9.6	0.2370462	23 41.9	86 57 55.3	N. 0 40 54.9	9.8571
2	6 24 47.26	23 39 39.7	.2372878	23 43.4	88 34 52.7	0 46 31.7	.8571
3	6 30 9.14	23 38 27.7	.2375142	23 44.8	90 11 51.8	0 52 6.3	.8570
4	6 35 30.93	23 36 33.6	.2377255	23 46.2	91 48 52.5	0 57 38.5	.8569
5	6 40 52.58	23 33 57.5	.2379216	23 47.6	93 25 55.0	1 3 8.0	.8569
6	6 46 14.04	23 30 39.3	.2381027	23 49.0	95 2 59.1	1 8 34.6	.8569
7	6 51 35.23	23 26 39.3	.2382687	23 50.4	96 40 4.8	1 13 58.0	.8568
8	6 56 56.11	23 21 57.6	.2384198	23 51.8	98 17 12.1	1 19 17.9	.8568
9	7 2 16.61	23 16 34.3	.2385561	23 53.2	99 54 21.0	1 24 34.1	.8567
10	7 7 36.69	23 10 29.6	.2386776	23 54.6	101 31 31.4	1 29 46.2	.8567
11	7 12 56.29	23 3 43.7	.2387844	23 56.0	103 8 43.3	1 34 54.2	.8566
12	7 18 15.36	22 56 16.9	.2388765	23 57.4	104 45 56.7	1 39 57.6	.8566
13	7 23 33.85	22 48 9.4	.2389540	23 58.7	106 23 11.5	1 44 56.3	.8566
14	7 28 51.72	22 39 21.6	.2390171	* *	108 0 27.7	1 49 50.0	.8566
15	7 34 8.92	22 29 53.8	.2390657	0 0.1	109 37 45.2	1 54 38.4	.8566
16	7 39 25.41	22 19 46.3	.2390999	0 1.4	111 15 4.0	1 59 21.4	.8566
17	7 44 41.15	22 8 59.5	.2391199	0 2.7	112 52 24.1	2 3 58.7	.8566
18	7 49 56.09	21 57 33.8	.2391256	0 4.0	114 29 45.4	2 8 30.1	.8566
19	7 55 10.21	21 45 29.6	.2391170	0 5.3	116 7 7.8	2 12 55.3	.8566
20	8 0 23.46	21 32 47.4	.2390941	0 6.6	117 44 31.3	2 17 14.1	.8566
21	8 5 35.82	21 19 27.5	.2390569	0 7.9	119 21 55.9	2 21 26.4	.8566
22	8 10 47.26	21 5 30.5	.2390055	0 9.1	120 59 21.4	2 25 31.8	.8566
23	8 15 57.75	20 50 56.9	.2389396	0 10.3	122 36 47.8	2 29 30.3	.8566
24	8 21 7.25	20 35 47.2	.2388593	0 11.6	124 14 15.1	2 33 21.6	.8566
25	8 26 15.75	20 20 1.9	.2387645	0 12.8	125 51 43.2	2 37 5.5	.8566
26	8 31 23.22	20 3 41.6	.2386553	0 13.9	127 29 12.0	2 40 41.9	.8566
27	8 36 29.64	19 46 46.8	.2385315	0 15.1	129 6 41.4	2 44 10.5	.8566
28	8 41 34.99	19 29 18.2	.2383931	0 16.3	130 44 11.4	2 47 31.2	.8566
29	8 46 39.26	19 11 16.3	.2382402	0 17.4	132 21 41.8	2 50 43.8	.8566
30	8 51 42.44	18 52 41.9	.2380726	0 18.5	133 59 12.7	2 53 48.2	.8566
31	8 56 44.51	18 33 35.4	.2378904	0 19.6	135 36 44.0	2 56 44.2	.8566
32	9 1 45.46	N. 18 13 57.6	0.2376936	0 20.7	137 14 15.5	N. 2 59 31.7	9.8566

VENUS.

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JULY, 1856.

At Transit over the Meridian of Greenwich.

Time	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	h m s	s	s	° ' "	"	"	"
	6 24 43 ²²	+13 ⁴³	0 ³⁵	N. 23 39 40 ³	- 2 ¹	4 ⁸	5 ⁰
	6 30 5 ⁴²	13 ⁴³	0 ³⁵	23 38 28 ⁷	3 ⁹	4 ⁸	5 ⁰
	6 35 27 ⁵³	13 ⁴²	0 ³⁵	23 36 35 ⁰	5 ⁶	4 ⁸	5 ⁰
	6 40 49 ⁵⁰	13 ⁴¹	0 ³⁵	23 33 59 ¹	7 ⁴	4 ⁸	5 ⁰
	6 46 11 ²⁷	13 ⁴⁰	0 ³⁵	23 30 41 ²	9 ¹	4 ⁸	5 ⁰
	6 51 32 ⁷⁹	13 ³⁹	0 ³⁵	23 26 41 ³	10 ⁹	4 ⁸	5 ⁰
	6 56 53 ⁹⁸	13 ³⁸	0 ³⁵	23 21 59 ⁶	12 ⁶	4 ⁸	5 ⁰
	7 2 14 ⁸⁰	13 ³⁶	0 ³⁵	23 16 36 ²	14 ⁴	4 ⁸	5 ⁰
	7 7 35 ¹⁹	13 ³⁴	0 ³⁵	23 10 31 ⁴	16 ¹	4 ⁸	5 ⁰
	7 12 55 ⁰⁹	13 ³²	0 ³⁵	23 3 45 ³	17 ⁸	4 ⁸	5 ⁰
	7 18 14 ⁴⁷	13 ³⁰	0 ³⁴	22 56 18 ²	19 ⁵	4 ⁷	4 ⁹
	7 23 33 ²⁷	13 ²⁷	0 ³⁴	22 48 10 ³	21 ²	4 ⁷	4 ⁹
	7 28 51 ⁴⁴	13 ²⁴	0 ³⁴	22 39 22 ¹	22 ⁸	4 ⁷	4 ⁹
	7 34 8 ⁹⁴	13 ²¹	0 ³⁴	22 29 53 ⁸	24 ⁵	4 ⁷	4 ⁹
	7 39 25 ⁷¹	13 ¹⁸	0 ³⁴	22 19 45 ⁷	26 ²	4 ⁷	4 ⁹
	7 44 41 ⁷⁴	13 ¹⁵	0 ³⁴	22 8 58 ²	27 ⁸	4 ⁷	4 ⁹
	7 49 56 ⁹⁷	13 ¹²	0 ³⁴	21 57 31 ⁸	29 ⁴	4 ⁷	4 ⁹
	7 55 11 ³⁶	13 ⁰⁸	0 ³⁴	21 45 26 ⁸	31 ⁰	4 ⁷	4 ⁹
	* * *	*	*	* * *	*	*	*
	8 0 24 ⁸⁹	13 ⁰⁵	0 ³⁴	21 32 43 ⁸	32 ⁶	4 ⁷	4 ⁹
	8 5 37 ⁵²	13 ⁰¹	0 ³⁴	21 19 23 ⁰	34 ²	4 ⁷	4 ⁹
	8 10 49 ²³	12 ⁹⁷	0 ³⁴	21 5 25 ¹	35 ⁷	4 ⁷	4 ⁹
	8 15 59 ⁹⁷	12 ⁹³	0 ³⁴	20 50 50 ⁵	37 ²	4 ⁷	4 ⁹
	8 21 9 ⁷³	12 ⁸⁸	0 ³⁴	20 35 39 ⁷	38 ⁷	4 ⁷	4 ⁹
	8 26 18 ⁴⁸	12 ⁸⁴	0 ³⁴	20 19 53 ³		4 ⁸	5 ⁰
	8 31 26 ¹⁹	12 ⁸⁰	0 ³⁴	20 3 31 ⁰		4 ⁸	5 ⁰
	8 36 32 ⁸⁵	12 ⁷⁵	0 ³⁴	19 46 36		4 ⁸	5 ⁰
	8 41 38 ⁴³	12 ⁷¹	0 ³⁴	19 20		4 ⁸	
	8 46 42 ⁹³	12 ⁶⁶	0 ³⁴	19 1		4 ⁸	
	8 51 46 ³³	12 ⁶²	0 ³⁴	18			
	8 56 48 ⁶¹	12 ⁵⁷	0 ³⁴	18			
	9 1 49 ⁷⁷	+12 ⁵²	0 ³⁴	N. 18			

AUGUST, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	
	Noon.	Noon.	Noon.		Noon.	Noon.	
1	9 1 45.46	N. 18 13 57.6	0.2376936	0 20.7	137 14 15.5	N. 2 59 31.79	
2	9 6 45.28	17 53 49.1	.2374821	0 21.7	138 51 47.2	3 2 10.5	
3	9 11 43.96	17 33 10.6	.2372561	0 22.8	140 29 19.0	3 4 40.6	
4	9 16 41.50	17 12 2.8	.2370156	0 23.8	142 6 50.8	3 7 1.7	
5	9 21 37.91	16 50 26.4	.2367606	0 24.8	143 44 22.5	3 9 13.8	
6	9 26 33.18	16 28 22.1	.2364913	0 25.8	145 21 54.1	3 11 16.8	
7	9 31 27.33	16 5 50.5	.2362076	0 26.7	146 59 25.5	3 13 10.6	
8	9 36 20.35	15 42 52.5	.2359098	0 27.7	148 36 56.5	3 14 55.1	
9	9 41 12.25	15 19 28.7	.2355978	0 28.6	150 14 27.2	3 16 30.1	
10	9 46 3.05	14 55 39.8	.2352718	0 29.5	151 51 57.4	3 17 55.7	
11	9 50 52.77	14 31 26.6	.2349319	0 30.4	153 29 27.0	3 19 11.7	
12	9 55 41.41	14 6 49.8	.2345781	0 31.2	155 6 55.9	3 20 18.1	
13	10 0 29.00	13 41 50.1	.2342107	0 32.1	156 44 24.1	3 21 14.8	
14	10 5 15.56	13 16 28.2	.2338297	0 32.9	158 21 51.4	3 22 1.9	
15	10 10 1.10	12 50 44.8	.2334352	0 33.7	159 59 17.8	3 22 39.3	
16	10 14 45.66	12 24 40.7	.2330272	0 34.5	161 36 43.1	3 23 6.9	
17	10 19 29.25	11 58 16.5	.2326057	0 35.3	163 14 7.4	3 23 24.7	
18	10 24 11.91	11 31 33.0	.2321708	0 36.1	164 51 30.4	3 23 32.8	
19	10 28 53.67	11 4 30.9	.2317224	0 36.8	166 28 52.2	3 23 31.0	
20	10 33 34.56	10 37 10.9	.2312607	0 37.6	168 6 12.6	3 23 19.5	
21	10 38 14.59	10 9 33.8	.2307855	0 38.3	169 43 31.6	3 22 58.3	
22	10 42 53.81	9 41 40.2	.2302970	0 39.0	171 20 49.0	3 22 27.4	
23	10 47 32.25	9 13 30.9	.2297950	0 39.7	172 58 4.9	3 21 46.7	
24	10 52 9.94	8 45 6.5	.2292796	0 40.4	174 35 19.1	3 20 56.4	
25	10 56 46.91	8 16 27.9	.2287506	0 41.1	176 12 31.5	3 19 56.5	
26	11 1 23.20	7 47 35.7	.2282080	0 41.7	177 49 42.1	3 18 47.0	
27	11 5 58.85	7 18 30.7	.2276518	0 42.4	179 26 50.8	3 17 28.1	
28	11 10 33.89	6 49 13.6	.2270820	0 43.0	181 3 57.6	3 15 59.7	
29	11 15 8.35	6 19 45.1	.2264985	0 43.7	182 41 2.3	3 14 22.0	
30	11 19 42.27	5 50 6.0	.2259014	0 44.3	184 18 5.0	3 12 35.1	
31	11 24 15.68	5 20 17.2	.2252906	0 44.9	185 55 5.5	3 10 39.0	
32	11 28 48.63	N. 4 50 19.2	0.2246663	0 45.5	187 32 3.7	N. 3 8 33.9	

VENUS.

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AUGUST, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
n s	s	s	° ' "	"	"	"
49° 77'	+12' 52"	0' 34"	N. 18 13 40' 5"	- 49' 8"	4' 8"	5' 0"
49° 79'	12' 48"	0' 34"	17 53 30' 7"	51' 1"	4' 8"	5' 0"
48° 67'	12' 43"	0' 34"	17 32 50' 8"	52' 3"	4' 8"	5' 0"
46° 40'	12' 38"	0' 34"	17 11 41' 7"	53' 5"	4' 8"	5' 0"
43° 00'	12' 34"	0' 34"	16 50 3' 9"	54' 7"	4' 8"	5' 0"
38° 45'	12' 29"	0' 33"	16 27 58' 1"	55' 8"	4' 8"	5' 0"
32° 77'	12' 24"	0' 33"	16 5 25' 2"	56' 9"	4' 8"	5' 0"
25° 96'	12' 20"	0' 33"	15 42 25' 8"	58' 0"	4' 8"	5' 0"
18° 03'	12' 15"	0' 33"	15 19 0' 6"	59' 1"	4' 8"	5' 0"
8° 99'	12' 10"	0' 33"	14 55 10' 3"	60' 1"	4' 8"	5' 0"
58° 86'	12' 06"	0' 33"	14 30 55' 7"	61' 1"	4' 8"	5' 0"
47° 66'	12' 01"	0' 33"	14 6 17' 5"	62' 1"	4' 8"	5' 0"
35° 40'	11' 97"	0' 33"	13 41 16' 4"	63' 0"	4' 8"	5' 0"
22° 09'	11' 92"	0' 33"	13 15 53' 1"	63' 9"	4' 8"	5' 0"
7° 77'	11' 88"	0' 33"	12 50 8' 4"	64' 8"	4' 8"	5' 0"
52° 47'	11' 84"	0' 33"	12 24 2' 9"	65' 7"	4' 8"	5' 0"
36° 19'	11' 80"	0' 33"	11 57 37' 4"	66' 5"	4' 8"	5' 0"
18° 98'	11' 77"	0' 33"	11 30 52' 6"	67' 3"	4' 8"	5' 0"
0° 87'	11' 73"	0' 33"	11 3 49' 2"	68' 0"	4' 8"	5' 0"
41° 87'	11' 69"	0' 32"	10 36 27' 9"	68' 7"	4' 8"	5' 0"
22° 03'	11' 66"	0' 32"	10 8 49' 5"	69' 4"	4' 8"	5' 0"
1° 36'	11' 62"	0' 32"	9 40 54' 6"	70' 1"	4' 8"	5' 0"
39° 92'	11' 59"	0' 33"	9 12 44' 1"	70' 8"	4' 9"	5' 1"
17° 72'	11' 56"	0' 33"	8 0 5"	71' 4"	4' 9"	5' 1"
54° 80'	11' 53"	0' 33"		71' 9"	4' 9"	5' 1"
31° 20'	11' 50"	0' 33"		72' 5"	4' 9"	5' 1"
6° 96'	11' 47"	0' 33"		73' 0"	4' 9"	5' 1"
42° 10'	11' 45"	0'				5' 1"
16° 66'	11' 43"	0'				5' 1"
50° 68'	11' 41"	0'				5' 1"
24° 19'	11' 39"	0'				5' 1"
57° 24'	+11' 37"					5' 1"

SEPTEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.	
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.
	Noon.	Noon.	Noon.		Noon.	Noon.
1	11 28 48.63	N. 4 50 19.2	0.2246663	0 45.5	187 32 3.7	N. 3 8 33.99
2	11 33 21.14	4 20 12.8	.2240284	0 46.1	189 8 59.7	3 6 19.8
3	11 37 53.26	3 49 58.9	.2233770	0 46.7	190 45 53.4	3 3 56.9
4	11 42 25.03	3 19 38.0	.2227121	0 47.3	192 22 44.6	3 1 25.3
5	11 46 56.49	2 49 11.1	.2220338	0 47.9	193 59 33.5	2 58 45.2
6	11 51 27.67	2 18 38.7	.2213422	0 48.4	195 36 19.8	2 55 56.6
7	11 55 58.62	1 48 1.6	.2206373	0 49.0	197 13 3.7	2 52 59.7
8	12 0 29.37	1 17 20.7	.2199193	0 49.6	198 49 45.0	2 49 54.7
9	12 4 59.97	0 46 36.5	.2191882	0 50.1	200 26 23.6	2 46 41.7
10	12 9 30.47	N. 0 15 49.8	.2184442	0 50.7	202 2 59.7	2 43 20.9
11	12 14 0.90	S. 0 14 58.6	.2176873	0 51.3	203 39 33.1	2 39 52.4
12	12 18 31.32	0 45 48.0	.2169176	0 51.8	205 16 3.8	2 36 16.5
13	12 23 1.75	1 16 37.7	.2161353	0 52.4	206 52 31.8	2 32 33.2
14	12 27 32.26	1 47 27.0	.2153403	0 53.0	208 28 57.1	2 28 42.9
15	12 32 2.88	2 18 15.2	.2145328	0 53.5	210 5 19.7	2 24 45.6
16	12 36 33.65	2 49 1.5	.2137128	0 54.1	211 41 39.5	2 20 41.6
17	12 41 4.63	3 19 45.3	.2128803	0 54.7	213 17 56.6	2 16 31.1
18	12 45 35.86	3 50 25.9	.2120353	0 55.3	214 54 11.0	2 12 14.3
19	12 50 7.39	4 21 2.5	.2111778	0 55.9	216 30 22.7	2 7 51.4
20	12 54 39.25	4 51 34.3	.2103077	0 56.4	218 6 31.6	2 3 22.5
21	12 59 11.49	5 22 0.8	.2094250	0 57.0	219 42 37.8	1 58 48.0
22	13 3 44.16	5 52 21.0	.2085297	0 57.6	221 18 41.3	1 54 8.1
23	13 8 17.29	6 22 34.3	.2076217	0 58.2	222 54 42.0	1 49 22.9
24	13 12 50.93	6 52 39.9	.2067009	0 58.9	224 30 40.1	1 44 32.7
25	13 17 25.12	7 22 37.1	.2057674	0 59.5	226 6 35.5	1 39 37.7
26	13 21 59.90	7 52 25.1	.2048209	1 0.1	227 42 28.3	1 34 38.2
27	13 26 35.31	8 22 3.1	.2038615	1 0.8	229 18 18.4	1 29 34.4
28	13 31 11.38	8 51 30.5	.2028891	1 1.4	230 54 6.0	1 24 26.5
29	13 35 48.15	9 20 46.3	.2019036	1 2.1	232 29 50.9	1 19 14.8
30	13 40 25.66	9 49 49.8	.2009051	1 2.8	234 5 33.4	1 13 59.6
31	13 45 3.94	S. 10 18 40.2	0.1998935	1 3.5	235 41 13.4	N. 1 8 41.0

SEPTEMBER, 1856.

At Transit over the Meridian of Greenwich.

h	m	s	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
11	28	57.24	+11.37	0.33	N. 4 49 22.2	-75.1	4.9	5.1
11	33	29.86	11.35	0.33	4 19 14.9	75.5	4.9	5.1
11	38	2.08	11.34	0.33	3 48 59.9	75.8	4.9	5.1
11	42	33.95	11.32	0.33	3 18 38.1	76.1	4.9	5.1
11	47	5.51	11.31	0.33	2 48 10.3	76.3	4.9	5.1
11	51	36.79	11.30	0.33	2 17 37.0	76.5	5.0	5.2
11	56	7.83	11.29	0.33	1 46 59.1	76.7	5.0	5.2
12	0	38.69	11.28	0.33	1 16 17.2	76.8	5.0	5.2
12	5	9.39	11.28	0.33	0 45 32.2	76.9	5.0	5.2
12	9	39.99	11.27	0.33	N. 0 14 44.7	77.0	5.0	5.2
12	14	10.53	11.27	0.33	S. 0 16 4.4	77.1	5.0	5.2
12	18	41.05	11.27	0.34	0 46 54.6	77.1	5.0	5.2
12	23	11.60	11.27	0.34	1 17 45.0	77.1	5.0	5.2
12	27	42.21	11.28	0.34	1 48 35.0	77.1	5.0	5.2
12	32	12.94	11.28	0.34	2 19 23.9	77.0	5.0	5.2
12	36	43.83	11.29	0.34	2 50 10.9	76.9	5.0	5.2
12	41	14.93	11.30	0.34	3 20 55.3	76.8	5.1	5.3
12	45	46.28	11.31	0.34	3 51 36.5	76.6	5.1	5.3
12	50	17.92	11.33	0.34	4 22 13.6	76.4	5.1	5.3
12	54	49.91	11.34	0.34	4 52 46.0	76.2	5.1	5.3
12	59	22.28	11.36	0.34	5 23 13.0	76.0	5.1	5.3
13	3	55.08	11.38	0.34	5 53 33.7	75.7	5.1	5.3
13	8	28.35	11.40	0.34	6 23 47.5	75.4	5.1	5.3
13	13	2.13	11.42	0.34	6 53 53.5	75.1	5.1	5.3
13	17	36.46	11.45	0.34	7 23 51.2			5.3
13	22	11.39	11.47	0.35	7 53 39.1			5.4
13	26	46.94	11.50	0.35	8 23 18			5.4
13	31	23.17	11.52	0.35	8			4
13	36	0.10	11.55	0.35	9			
13	40	37.78	11.58	0.35	9			
13	45	16.23	+11.62	0.36	S. 10			

OCTOBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	
	Noon.	Noon.	Noon.		Noon.	Noon.	
1	13 45 3.94	S. 10 18 40.2	0.1998935	1 3.5	235 41 13.4	N. 1 8 41.0	9.8
2	13 49 43.03	10 47 16.8	.1988688	1 4.2	237 16 50.9	1 3 19.3	.8
3	13 54 22.96	11 15 38.7	.1978310	1 4.9	238 52 26.0	0 57 54.9	.8
4	13 59 3.76	11 43 45.2	.1967802	1 5.7	240 27 58.8	0 52 27.8	.8
5	14 3 45.46	12 11 35.4	.1957164	1 6.4	242 3 29.3	0 46 58.4	.8
6	14 8 28.10	12 39 8.6	.1946396	1 7.2	243 38 57.5	0 41 27.0	.8
7	14 13 11.71	13 6 24.0	.1935499	1 8.0	245 14 23.6	0 35 53.8	.86
8	14 17 56.30	13 33 20.7	.1924474	1 8.8	246 49 47.5	0 30 19.0	.86
9	14 22 41.91	13 59 58.0	.1913320	1 9.6	248 25 9.3	0 24 43.0	.86
10	14 27 28.57	14 26 15.2	.1902040	1 10.4	250 0 29.1	0 19 5.9	.86
11	14 32 16.30	14 52 11.4	.1890632	1 11.3	251 35 47.0	0 13 28.1	.86
12	14 37 5.13	15 17 45.9	.1879098	1 12.1	253 11 2.9	0 7 49.7	.86
13	14 41 55.08	15 42 57.9	.1867439	1 13.0	254 46 17.0	N. 0 2 11.1	.86
14	14 46 46.16	16 7 46.6	.1855653	1 13.9	256 21 29.3	S. 0 3 27.5	.86
15	14 51 38.41	16 32 11.2	.1843743	1 14.9	257 56 39.9	0 9 5.9	.86
16	14 56 31.84	16 56 10.9	.1831706	1 15.8	259 31 48.8	0 14 43.7	.86
17	15 1 26.47	17 19 45.0	.1819543	1 16.8	261 6 56.2	0 20 20.7	.86
18	15 6 22.31	17 42 52.7	.1807254	1 17.8	262 42 2.1	0 25 56.8	.86
19	15 11 19.38	18 5 33.2	.1794838	1 18.8	264 17 6.5	0 31 31.5	.86
20	15 16 17.67	18 27 45.7	.1782294	1 19.8	265 52 9.6	0 37 4.7	.86
21	15 21 17.21	18 49 29.5	.1769622	1 20.9	267 27 11.4	0 42 36.1	.86
22	15 26 17.99	19 10 43.9	.1756819	1 22.0	269 2 12.0	0 48 5.5	.86
23	15 31 20.02	19 31 27.9	.1743886	1 23.1	270 37 11.4	0 53 32.6	.86
24	15 36 23.30	19 51 41.0	.1730821	1 24.2	272 12 9.8	0 58 57.2	.86
25	15 41 27.82	20 11 22.3	.1717622	1 25.3	273 47 7.1	1 4 19.0	.86
26	15 46 33.58	20 30 31.1	.1704289	1 26.4	275 22 3.6	1 9 37.8	.86
27	15 51 40.56	20 49 6.6	.1690819	1 27.6	276 56 59.2	1 14 53.3	.86
28	15 56 48.75	21 7 8.1	.1677213	1 28.8	278 31 54.0	1 20 5.4	.86
29	16 1 58.13	21 24 34.9	.1663469	1 30.0	280 6 48.1	1 25 13.7	.86
30	16 7 8.67	21 41 26.2	.1649585	1 31.3	281 41 41.6	1 30 18.1	.86
31	16 12 20.36	21 57 41.4	.1635562	1 32.5	283 16 34.6	1 35 18.3	.86
32	16 17 33.17	S. 22 13 19.8	0.1621398	1 33.8	284 51 27.0	S. 1 40 14.1	9

OCTOBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
13 45 16.23	+11.62	0.36	S. 10 19 56.2	-71.8	5.2	5.4
13 49 55.49	11.65	0.36	10 48 33.0	71.2	5.2	5.4
13 54 35.60	11.69	0.36	11 16 55.1	70.6	5.2	5.4
13 59 16.59	11.73	0.37	11 45 1.7	69.9	5.3	5.5
14 3 58.48	11.77	0.37	12 12 52.1	69.2	5.3	5.5
14 8 41.31	11.81	0.37	12 40 25.3	68.5	5.3	5.5
14 13 25.12	11.85	0.37	13 7 40.7	67.8	5.3	5.5
14 18 9.92	11.89	0.37	13 34 37.4	67.0	5.3	5.5
14 22 55.74	11.93	0.37	14 1 14.7	66.1	5.3	5.5
14 27 42.62	11.98	0.37	14 27 31.8	65.3	5.3	5.5
14 32 30.57	12.02	0.38	14 53 27.9	64.4	5.4	5.6
14 37 19.63	12.07	0.38	15 19 2.2	63.5	5.4	5.6
14 42 9.81	12.11	0.38	15 44 14.0	62.5	5.4	5.6
14 47 1.14	12.16	0.38	16 9 2.4	61.5	5.4	5.6
14 51 53.64	12.21	0.38	16 33 26.7	60.5	5.4	5.6
14 56 47.33	12.26	0.38	16 57 26.0	59.5	5.4	5.6
15 1 42.22	12.31	0.38	17 20 59.7	58.4	5.4	5.6
15 6 38.33	12.36	0.39	17 44 6.9	57.3	5.5	5.7
15 11 35.67	12.42	0.39	18 6 46.8	56.1	5.5	5.7
15 16 34.25	12.47	0.39	18 28 58.7	54.9	5.5	5.7
15 21 34.07	12.52	0.39	18 50 41.9	53.7	5.5	5.7
15 26 35.15	12.57	0.39	19 11 55.5	52.5	5.5	5.7
15 31 37.48	12.63	0.39	19 32 38.8	51.2	5.5	5.7
15 36 41.06	12.68	0.40	19 52 50.9	49.9	5.6	5.8
15 41 45.90	12.73	0.40	20 12 31.3	48.5	5.6	5.8
15 46 51.98	12.78	0.40	20 31 39.0	47.1	5.6	5.8
15 51 59.28	12.83	0.40	20 50 13.4	45.7	5.6	5.8
15 57 7.80	12.88	0.40	21 8 13.7	44.3	5.6	5.8
16 2 17.51	12.93	0.40	21 25 39.1	42.8	5.6	5.8
16 7 28.40	12.98	0.41	21 42 29.1	41.3	5.7	5.9
16 12 40.43	13.02	0.41	21 58 42.8	39.8	5.7	5.9
16 17 53.58	+13.07	0.41	S. 22 14 19.6	-38.3	5.7	5.9

NOVEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vel.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	16 17 33.17	S. 22 13 19.8	0.1621398	1 33.8	284 51 27.0	S. 1 40 14.1	9.861997
2	16 22 47.06	22 28 20.8	.1607092	1 35.1	286 26 19.1	1 45 5.3	.862032
3	16 28 2.01	22 42 43.6	.1592645	1 36.4	288 1 10.8	1 49 51.6	.862064
4	16 33 17.98	22 56 27.8	.1578055	1 37.7	289 36 2.2	1 54 32.9	.862092
5	16 38 34.92	23 9 32.6	.1563323	1 39.1	291 10 53.4	1 59 8.9	.862119
6	16 43 52.80	23 21 57.5	.1548448	1 40.4	292 45 44.5	2 3 39.4	.862141
7	16 49 11.58	23 33 42.0	.1533430	1 41.8	294 20 35.5	2 8 4.3	.862162
8	16 54 31.21	23 44 45.6	.1518270	1 43.2	295 55 26.4	2 12 23.3	.862180
9	16 59 51.63	23 55 7.7	.1502967	1 44.6	297 30 17.5	2 16 36.3	.862200
10	17 5 12.81	24 4 47.9	.1487522	1 46.0	299 5 8.6	2 20 43.0	.862217
11	17 10 34.69	24 13 45.9	.1471934	1 47.4	300 39 59.9	2 24 43.2	.862231
12	17 15 57.23	24 22 1.0	.1456203	1 48.9	302 14 51.4	2 28 36.9	.862242
13	17 21 20.35	24 29 33.1	.1440328	1 50.3	303 49 43.2	2 32 23.7	.862251
14	17 26 44.01	24 36 21.7	.1424309	1 51.8	305 24 35.3	2 36 3.6	.862258
15	17 32 8.15	24 42 26.5	.1408146	1 53.2	306 59 27.8	2 39 36.4	.862263
16	17 37 32.71	24 47 47.1	.1391838	1 54.7	308 34 20.8	2 43 1.8	.862266
17	17 42 57.63	24 52 23.5	.1375382	1 56.2	310 9 14.3	2 46 19.9	.862267
18	17 48 22.84	24 56 15.3	.1358779	1 57.7	311 44 8.3	2 49 30.3	.862267
19	17 53 48.28	24 59 22.3	.1342026	1 59.1	313 19 2.9	2 52 33.0	.862266
20	17 59 13.89	25 1 44.4	.1325121	2 0.6	314 53 58.1	2 55 27.9	.862263
21	18 4 39.59	25 3 21.5	.1308063	2 2.1	316 28 54.0	2 58 14.7	.862257
22	18 10 5.32	25 4 13.4	.1290848	2 3.6	318 3 50.7	3 0 53.4	.862248
23	18 15 31.01	25 4 20.1	.1273475	2 5.1	319 38 48.1	3 3 23.8	.862236
24	18 20 56.59	25 3 41.6	.1255942	2 6.6	321 13 46.3	3 5 45.9	.862220
25	18 26 21.98	25 2 17.8	.1238246	2 8.1	322 48 45.4	3 7 59.5	.862199
26	18 31 47.12	25 0 8.8	.1220386	2 9.5	324 23 45.4	3 10 4.5	.862175
27	18 37 11.93	24 57 14.7	.1202359	2 11.0	325 58 46.3	3 12 0.8	.862143
28	18 42 36.33	24 53 35.7	.1184163	2 12.5	327 33 48.1	3 13 48.3	.862119
29	18 48 0.27	24 49 11.8	.1165797	2 13.9	329 8 51.0	3 15 27.0	.862092
30	18 53 23.67	24 44 3.3	.1147258	2 15.4	330 43 54.9	3 16 56.8	.862064
31	18 58 46.45	S. 24 38 10.4	0.1128545	2 16.8	332 18 59.8	S. 3 18 17.5	9.862033

NOVEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s 16 17 53.58	+13.07	0.41	S. 22 14 19.6	-38.3	5.7	5.9
16 23 7.83	13.12	0.41	22 29 18.9	36.7	5.7	5.9
16 28 23.13	13.16	0.42	22 43 40.0	35.1	5.7	5.9
16 33 39.45	13.20	0.42	22 57 22.2	33.5	5.8	6.0
16 38 56.76	13.24	0.42	23 10 25.1	31.8	5.8	6.0
16 44 15.01	13.28	0.42	23 22 48.0	30.1	5.8	6.0
16 49 34.15	13.32	0.43	23 34 30.3	28.4	5.8	6.0
16 54 54.14	13.35	0.43	23 45 31.5	26.7	5.8	6.0
17 0 14.94	13.38	0.43	23 55 51.2	24.9	5.9	6.1
17 5 36.49	13.41	0.44	24 5 29.0	23.2	5.9	6.1
17 10 58.74	13.44	0.44	24 14 24.3	21.4	5.9	6.1
17 16 21.64	13.47	0.44	24 22 36.7	19.6	5.9	6.1
17 21 45.13	13.49	0.45	24 30 6.0	17.8	6.0	6.2
17 27 9.15	13.51	0.45	24 36 51.6	16.0	6.0	6.2
17 32 33.66	13.53	0.45	24 42 53.3	14.2	6.0	6.2
17 37 58.58	13.55	0.45	24 48 10.8	12.3	6.0	6.2
17 43 23.86	13.56	0.45	24 52 43.9	10.4	6.1	6.3
17 48 49.42	13.57	0.45	24 56 32.3	8.6	6.1	6.3
17 54 15.22	13.58	0.45	24 59 35.8	6.7	6.1	6.3
17 59 41.17	13.58	0.45	25 1 54.3	4.8	6.1	6.3
18 5 7.21	13.59	0.45	25 3 27.6	2.9	6.1	6.3
18 10 33.28	13.59	0.46	25 4 15.7	-1.1	6.2	6.4
18 15 59.30	13.58	0.46	25 4 18.5	+0.8	6.2	6.4
18 21 25.20	13.58	0.46	25 3 36.0	2.7	6.2	6.4
18 26 50.90	13.57	0.46	25 2 8.1	4.6	6.2	6.5
18 32 16.35	13.56	0.46	24 50 25.0	6.5	6.2	6.5
18 37 41.45	13.54	0.46	24	8.4	6.2	6.5
18 43 6.15	13.52	0.46	24	10.2	6.2	6.5
18 48 30.37	13.50	0.47		12.1		6.6
18 53 54.03	13.48	0.47		14.0		6.6
18 59 17.08	+13.45	0.4		15.8		6.6

DECEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	18 58 46.45	S. 24 38 10.4	.1128545	2 16.8	332 18 59.8	S. 3 18 17.5	9.861
2	19 4 8.55	24 31 33.5	.1109657	2 18.2	333 54 5.9	3 19 29.2	.861
3	19 9 29.90	24 24 12.7	.1090591	2 19.6	335 29 13.0	3 20 31.8	.861
4	19 14 50.44	24 16 8.5	.1071347	2 21.0	337 4 21.3	3 21 25.2	.861
5	19 20 10.11	24 7 21.1	.1051923	2 22.4	338 39 30.7	3 22 9.3	.861
6	19 25 28.84	23 57 51.1	.1032318	2 23.8	340 14 41.3	3 22 44.2	.861
7	19 30 46.57	23 47 38.9	.1012532	2 25.2	341 49 53.1	3 23 9.8	.861
8	19 36 3.26	23 36 44.9	.0992563	2 26.5	343 25 6.1	3 23 26.1	.861
9	19 41 18.84	23 25 9.5	.0972411	2 27.8	345 0 20.4	3 23 33.0	.861
10	19 46 33.28	23 12 53.4	.0952075	2 29.1	346 35 35.9	3 23 30.6	.861
11	19 51 46.53	22 59 57.0	.0931553	2 30.4	348 10 52.7	3 23 18.8	.861
12	19 56 58.54	22 46 20.9	.0910845	2 31.6	349 46 10.8	3 22 57.7	.861
13	20 2 9.28	22 32 5.6	.0889949	2 32.9	351 21 30.2	3 22 27.2	.861
14	20 7 18.71	22 17 11.8	.0868863	2 34.1	352 56 50.9	3 21 47.4	.861
15	20 12 26.80	22 1 40.1	.0847586	2 35.3	354 32 12.9	3 20 58.3	.861
16	20 17 33.51	21 45 31.1	.0826115	2 36.4	356 7 36.3	3 19 59.9	.861
17	20 22 38.82	21 28 45.4	.0804447	2 37.6	357 43 1.0	3 18 52.3	.861
18	20 27 42.71	21 11 23.8	.0782582	2 38.7	359 18 27.2	3 17 35.5	.861
19	20 32 45.14	20 53 26.8	.0760515	2 39.8	0 53 54.7	3 16 9.5	.861
20	20 37 46.10	20 34 55.2	.0738245	2 40.9	2 29 23.6	3 14 34.4	.861
21	20 42 45.58	20 15 49.6	.0715768	2 41.9	4 4 54.0	3 12 50.4	.861
22	20 47 43.56	19 56 10.8	.0693080	2 42.9	5 40 25.7	3 10 57.4	.861
23	20 52 40.02	19 35 59.5	.0670178	2 43.9	7 15 58.9	3 8 55.5	.861
24	20 57 34.95	19 15 16.5	.0647058	2 44.9	8 51 33.5	3 6 44.8	.861
25	21 2 28.35	18 54 2.4	.0623716	2 45.8	10 27 9.6	3 4 25.5	.861
26	21 7 20.19	18 32 18.2	.0600148	2 46.8	12 2 47.2	3 1 57.6	.861
27	21 12 10.48	18 10 4.5	.0576352	2 47.7	13 38 26.2	2 59 21.2	.861
28	21 16 59.21	17 47 22.1	.0552323	2 48.5	15 14 6.8	2 56 36.4	.861
29	21 21 46.37	17 24 11.9	.0528059	2 49.4	16 49 48.8	2 53 43.3	.861
30	21 26 31.96	17 0 34.6	.0503555	2 50.2	18 25 32.3	2 50 42.2	.861
31	21 31 15.99	16 36 31.0	.0478809	2 51.0	20 1 17.3	2 47 33.0	.861
32	21 35 58.46	S. 16 12 2.0	.0453817	2 51.7	21 37 3.8	S. 2 44 16.0	9.861

DECEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.			Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.			Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.	
h	m	s	"	"	°	'	"	"	"	"	
18	59	17	08	+13	0	24	37	34	6	6	6
19	4	39	43	13	0	24	30	53	0	6	6
19	10	1	02	13	0	24	23	27	6	6	7
19	15	21	79	13	0	24	15	18	7	6	7
19	20	41	67	13	0	24	6	26	7	6	7
19	26	0	61	13	0	23	56	51	9	6	8
19	31	18	54	13	0	23	46	34	9	6	8
19	36	35	41	13	0	23	35	36	0	6	8
19	41	51	17	13	0	23	23	55	9	6	9
19	47	5	77	13	0	23	11	34	9	6	9
19	52	19	17	13	0	22	58	33	6	6	9
19	57	31	33	12	0	22	44	52	7	6	9
20	2	42	20	12	0	22	30	32	6	6	9
20	7	51	75	12	0	22	15	33	9	6	9
20	12	59	94	12	0	21	59	57	4	6	9
20	18	6	75	12	0	21	43	43	6	6	9
20	23	12	15	12	0	21	26	53	2	6	9
20	28	16	11	12	0	21	9	26	8	6	9
20	33	18	61	12	0	20	51	25	2	6	9
20	38	19	63	12	0	20	32	48	9	6	9
20	43	19	16	12	0	20	13	38	7	7	0
20	48	17	18	12	0	19	53	55	4	7	0
20	53	13	67	12	0	19	33	39	6	7	1
20	58	8	63	12	0	19	12	52	1	7	1
21	3	2	04	12	0	18	51	33	8	7	1
21	7	53	89	12	0	18	29	45	3	7	2
21	12	44	18	12	0	18		17	4	7	2
21	17	32	89	12	0					7	3
21	22	20	04	11	0					7	3
21	27	5	61	11	0					7	6
21	31	49	61	11	0					6	8
21	36	32	04	+11	74					+61	9

JANUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad. V.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	12 34 16.46	S. 1 12 49.8	0.1175944	17 51.1	152 10 41.4	N. 1 47 53.9	0.2215
2	12 35 50.10	1 21 59.9	.1142799	17 48.8	152 36 54.0	1 47 41.6	.2215
3	12 37 22.81	1 31 3.0	.1109383	17 46.4	153 3 6.6	1 47 29.0	.2215
4	12 38 54.57	1 39 58.9	.1075697	17 43.9	153 29 19.2	1 47 15.9	.2215
5	12 40 25.35	1 48 47.5	.1041739	17 41.5	153 55 31.8	1 47 2.5	.2215
6	12 41 55.13	1 57 28.6	.1007513	17 39.1	154 21 44.4	1 46 48.7	.2215
7	12 43 23.89	2 6 2.1	.0973020	17 36.6	154 47 57.0	1 46 34.6	.2215
8	12 44 51.60	2 14 27.8	.0938262	17 34.1	155 14 9.7	1 46 20.0	.2215
9	12 46 18.25	2 22 45.6	.0903239	17 31.6	155 40 22.4	1 46 5.1	.2215
10	12 47 43.81	2 30 55.4	.0867953	17 29.1	156 6 35.3	1 45 49.9	.2215
11	12 49 8.25	2 38 57.0	.0832408	17 26.5	156 32 48.2	1 45 34.2	.2215
12	12 50 31.55	2 46 50.3	.0796605	17 24.0	156 59 1.3	1 45 18.2	.2215
13	12 51 53.69	2 54 35.2	.0760545	17 21.4	157 25 14.5	1 45 1.9	.2215
14	12 53 14.65	3 2 11.6	.0724230	17 18.8	157 51 27.9	1 44 45.1	.2215
15	12 54 34.40	3 9 39.3	.0687663	17 16.1	158 17 41.5	1 44 28.0	.2215
16	12 55 52.92	3 16 58.2	.0650845	17 13.5	158 43 55.3	1 44 10.5	.2215
17	12 57 10.18	3 24 8.3	.0613780	17 10.8	159 10 9.3	1 43 52.6	.2215
18	12 58 26.16	3 31 9.3	.0576469	17 8.1	159 36 23.6	1 43 34.4	.2215
19	12 59 40.83	3 38 1.2	.0538911	17 5.4	160 2 38.1	1 43 15.8	.2215
20	13 0 54.15	3 44 43.8	.0501110	17 2.7	160 28 52.9	1 42 56.8	.2215
21	13 2 6.10	3 51 16.9	.0463066	16 59.9	160 55 8.0	1 42 37.5	.2215
22	13 3 16.65	3 57 40.4	.0424783	16 57.2	161 21 23.4	1 42 17.8	.2215
23	13 4 25.76	4 3 54.2	.0386262	16 54.4	161 47 39.1	1 41 57.8	.2215
24	13 5 33.40	4 9 58.1	.0347506	16 51.5	162 13 55.2	1 41 37.4	.2215
25	13 6 39.53	4 15 51.8	.0308519	16 48.7	162 40 11.6	1 41 16.6	.2215
26	13 7 44.10	4 21 35.2	.0269304	16 45.8	163 6 28.5	1 40 55.4	.2205
27	13 8 47.09	4 27 8.1	.0229865	16 42.9	163 32 45.7	1 40 33.9	.2205
28	13 9 48.45	4 32 30.3	.0190208	16 40.0	163 59 3.4	1 40 12.1	.2205
29	13 10 48.14	4 37 41.6	.0150335	16 37.0	164 25 21.5	1 39 49.9	.2205
30	13 11 46.12	4 42 41.9	.0110255	16 34.0	164 51 40.1	1 39 27.4	.2205
31	13 12 42.35	4 47 30.9	.0069976	16 31.0	165 17 59.2	1 39 4.5	.2205
32	13 13 36.77	S. 4 52 8.4	0.0029505	16 27.9	165 44 18.7	N. 1 38 41.2	0.2205

JANUARY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
12 35 26.20	+ 3.89	0.23	S. 1 19 39.6	-22.8	3.4	6.5
12 36 59.00	3.85	0.23	1 28 43.6	22.5	3.4	6.6
12 38 30.86	3.81	0.23	1 37 40.5	22.2	3.4	6.6
12 40 1.74	3.77	0.23	1 46 30.1	21.9	3.5	6.7
12 41 31.63	3.72	0.23	1 55 12.3	21.6	3.5	6.7
12 43 0.51	3.68	0.23	2 3 47.0	21.3	3.5	6.8
12 44 28.35	3.64	0.24	2 12 13.9	21.0	3.6	6.9
12 45 55.14	3.59	0.24	2 20 33.0	20.6	3.6	6.9
12 47 20.84	3.55	0.24	2 28 44.1	20.3	3.6	7.0
12 48 45.44	3.50	0.24	2 36 47.1	20.0	3.6	7.0
12 50 8.90	3.45	0.25	2 44 41.8	19.6	3.7	7.1
12 51 31.22	3.41	0.25	2 52 28.2	19.3	3.7	7.1
12 52 52.36	3.36	0.25	3 0 6.1	18.9	3.7	7.2
12 54 12.30	3.31	0.26	3 7 35.4	18.5	3.8	7.3
12 55 31.02	3.25	0.26	3 14 56.0	18.2	3.8	7.3
12 56 48.50	3.20	0.26	3 22 7.8	17.8	3.8	7.4
12 58 4.70	3.15	0.26	3 29 10.6	17.4	3.8	7.4
12 59 19.61	3.09	0.26	3 36 4.3	17.0	3.9	7.5
13 0 33.19	3.04	0.26	3 42 48.8	16.7	3.9	7.6
13 1 45.40	2.98	0.26	3 49 23.9	16.3	3.9	7.6
13 2 56.22	2.92	0.27	3 55 49.5	15.9	4.0	7.7
13 4 5.62	2.86	0.27	4 2 5.4	15.5	4.0	7.8
13 5 13.56	2.80	0.27	4 8 11.5	15.0	4.0	7.8
13 6 20.01	2.74	0.27	4 14 7.6	14.6	4.1	7.9
13 7 24.93	2.67	0.27	4 19 53.4	14.2	4.1	8.0
13 8 28.27	2.61	0.28	4 25 28.8	13.8	4.2	8.1
13 9 30.00	2.54	0.28	4 30 53.6	13.3	4.2	8.1
13 10 30.08	2.47	0.28	4 36	12.9	4.2	8.2
13 11 28.47	2.40	0.29	4	12.4	4.2	8.3
13 12 25.13	2.32	0.29	4	11.9	4	8.4
13 13 20.01	2.25	0.29		1.4	4	8.4
13 14 13.06	+ 2.17	0.30	S		4	

FEBRUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vel.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	13 13 36.77	S. 4 52 8.4	0.0029505	16 27.9	165 44 18.7	N. 1 38 41.2	0.22057
2	13 14 29.36	4 56 34.3	9.9988852	16 24.9	166 10 38.8	1 38 17.6	.22045
3	13 15 20.06	5 0 48.3	.9948026	16 21.8	166 36 59.4	1 37 53.6	.2204
4	13 16 8.83	5 4 50.2	.9907036	16 18.6	167 3 20.6	1 37 29.3	.2203
5	13 16 55.62	5 8 40.0	.9865894	16 15.4	167 29 42.3	1 37 4.7	.2203
6	13 17 40.40	5 12 17.4	.9824611	16 12.2	167 56 4.6	1 36 39.7	.2201
7	13 18 23.12	5 15 42.3	.9783199	16 9.0	168 22 27.6	1 36 14.3	.220
8	13 19 3.74	5 18 54.5	.9741670	16 5.7	168 48 51.1	1 35 48.6	.219
9	13 19 42.23	5 21 53.9	.9700038	16 2.4	169 15 15.3	1 35 22.5	.219
10	13 20 18.53	5 24 40.3	.9658319	15 59.0	169 41 40.1	1 34 56.1	.219
11	13 20 52.61	5 27 13.7	.9616523	15 55.6	170 8 5.6	1 34 29.3	.219
12	13 21 24.43	5 29 33.8	.9574666	15 52.2	170 34 31.9	1 34 2.2	.219
13	13 21 53.96	5 31 40.6	.9532762	15 48.7	171 0 58.8	1 33 34.7	.219
14	13 22 21.14	5 33 33.9	.9490828	15 45.2	171 27 26.5	1 33 6.9	.219
15	13 22 45.95	5 35 13.6	.9448878	15 41.7	171 53 54.9	1 32 38.7	.219
16	13 23 8.35	5 36 39.6	.9406933	15 38.1	172 20 24.1	1 32 10.2	.219
17	13 23 28.30	5 37 51.8	.9365006	15 34.5	172 46 54.1	1 31 41.3	.219
18	13 23 45.74	5 38 50.0	.9323116	15 30.8	173 13 24.9	1 31 12.1	.218
19	13 24 0.64	5 39 34.0	.9281282	15 27.1	173 39 56.6	1 30 42.6	.218
20	13 24 12.95	5 40 3.6	.9239523	15 23.3	174 6 29.1	1 30 12.7	.218
21	13 24 22.65	5 40 18.9	.9197861	15 19.5	174 33 2.5	1 29 42.5	.218
22	13 24 29.70	5 40 19.7	.9156314	15 15.7	174 59 36.8	1 29 11.9	.218
23	13 24 34.04	5 40 5.7	.9114910	15 11.8	175 26 12.0	1 28 41.0	.218
24	13 24 35.64	5 39 36.8	.9073672	15 7.8	175 52 48.2	1 28 9.8	.218
25	13 24 34.45	5 38 52.9	.9032628	15 3.8	176 19 25.3	1 27 38.2	.218
26	13 24 30.45	5 37 53.9	.8991805	14 59.8	176 46 3.4	1 27 6.3	.217
27	13 24 23.59	5 36 39.7	.8951233	14 55.8	177 12 42.4	1 26 34.1	.217
28	13 24 13.84	5 35 10.1	.8910935	14 51.7	177 39 22.5	1 26 1.5	.217
29	13 24 1.18	5 33 25.1	.8870951	14 47.5	178 6 3.6	1 25 28.6	.217
30	13 23 45.58	S. 5 31 24.7	9.8831316	14 43.3	178 32 45.7	N. 1 24 55.4	0.217

FEBRUARY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
13 14 13.06	+ 2.17	0.30	S. 4 55 12.1	-11.0	4.4	8.5
13 15 4.24	2.09	0.30	4 59 29.3	10.5	4.5	8.6
13 15 53.52	2.01	0.30	5 3 34.6	10.0	4.5	8.7
13 16 40.84	1.93	0.31	5 7 27.7	9.5	4.6	8.8
13 17 26.17	1.85	0.31	5 11 8.6	8.9	4.6	8.8
13 18 9.47	1.76	0.31	5 14 37.1	8.4	4.6	8.9
13 18 50.69	1.67	0.31	5 17 53.0	7.9	4.7	9.0
13 19 29.79	1.58	0.31	5 20 56.2	7.4	4.7	9.1
13 20 6.73	1.49	0.32	5 23 46.6	6.8	4.8	9.2
13 20 41.48	1.40	0.32	5 26 23.9	6.3	4.8	9.3
13 21 13.99	1.31	0.33	5 28 48.2	5.7	4.9	9.4
13 21 44.22	1.21	0.33	5 30 59.2	5.2	4.9	9.5
13 22 12.13	1.11	0.34	5 32 56.8	4.6	5.0	9.6
13 22 37.69	1.02	0.34	5 34 40.9	4.1	5.0	9.6
13 23 0.88	0.92	0.34	5 36 11.5	3.5	5.0	9.7
13 23 21.63	0.82	0.34	5 37 28.3	2.9	5.1	9.8
13 23 39.90	0.71	0.34	5 38 31.2	2.3	5.1	9.9
13 23 55.66	0.60	0.35	5 39 20.0	1.7	5.2	10.0
13 24 8.86	0.50	0.35	5 39 54.7	1.1	5.2	10.1
13 24 19.47	0.39	0.36	5 40 15.1	-0.5	5.3	10.2
13 24 27.46	0.28	0.36	5 40 21.1	+0.1	5.3	10.3
13 24 32.78	0.16	0.37	5 40 12.5	0.7	5.4	10.4
13 24 35.38	+0.05	0.37	5 39 49.1	1.3	5.4	10.5
13 24 35.22	-0.06	0.37	5 39 10.9	1.9	5.5	10.6
13 24 32.27	0.18	0.37	5 38 17.7	2.5	5.5	10.7
13 24 26.50	0.30	0.38	5 37 9.4	3.2	5.6	10.8
13 24 17.87	0.42	0.38	5 35 45.8	3.8	5.6	10.9
13 24 6.35	0.54	0.38	5 34 6.9	4.4	5.7	11.0
13 23 51.92	0.66	0.38	5 32 12.7	5.1	5.7	11.1
13 23 34.56	-0.78	0.39	S. 5 30 3.2	+5.7	5.8	11.2

MARCH, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	13 23 45.58	S. 5 31 24.7	9.8831316	14 43.3	178 32 45.7	N. 1 24 55.4	0.21
2	13 23 27.04	5 29 8.8	.8792063	14 39.0	178 59 28.9	1 24 21.8	.21
3	13 23 5.54	5 26 37.5	.8753229	14 34.7	179 26 13.2	1 23 47.9	.21
4	13 22 41.07	5 23 50.9	.8714851	14 30.3	179 52 58.6	1 23 13.7	.21
5	13 22 13.62	5 20 48.9	.8676967	14 25.9	180 19 45.1	1 22 39.2	.21
6	13 21 43.21	5 17 31.7	.8639618	14 21.4	180 46 32.7	1 22 4.3	.21
7	13 21 9.83	5 13 59.5	.8602843	14 16.9	181 13 21.5	1 21 29.1	.21
8	13 20 33.50	5 10 12.4	.8566682	14 12.3	181 40 11.5	1 20 53.6	.21
9	13 19 54.24	5 6 10.6	.8531175	14 7.7	182 7 2.6	1 20 17.7	.21
10	13 19 12.08	5 1 54.4	.8496362	14 3.1	182 33 55.0	1 19 41.5	.21
11	13 18 27.04	4 57 24.0	.8462287	13 58.4	183 0 48.6	1 19 5.1	.21
12	13 17 39.16	4 52 39.8	.8428990	13 53.6	183 27 43.4	1 18 28.3	.21
13	13 16 48.50	4 47 42.1	.8396509	13 48.8	183 54 39.5	1 17 51.1	.21
14	13 15 55.11	4 42 31.4	.8364885	13 44.0	184 21 36.9	1 17 13.7	.21
15	13 14 59.05	4 37 8.0	.8334158	13 39.1	184 48 35.7	1 16 36.0	.21
16	13 14 0.38	4 31 32.3	.8304365	13 34.2	185 15 35.7	1 15 57.9	.21
17	13 12 59.19	4 25 45.0	.8275546	13 29.2	185 42 37.1	1 15 19.5	.21
18	13 11 55.53	4 19 46.4	.8247741	13 24.2	186 9 39.8	1 14 40.8	.21
19	13 10 49.49	4 13 37.1	.8220988	13 19.1	186 36 44.0	1 14 1.8	.21
20	13 9 41.15	4 7 17.6	.8195323	13 14.1	187 3 49.5	1 13 22.5	.21
21	13 8 30.60	4 0 48.5	.8170784	13 9.0	187 30 56.5	1 12 42.9	.21
22	13 7 17.95	3 54 10.3	.8147404	13 3.8	187 58 4.9	1 12 3.0	.21
23	13 6 3.28	3 47 23.7	.8125214	12 58.6	188 25 14.8	1 11 22.8	.21
24	13 4 46.73	3 40 29.4	.8104256	12 53.4	188 52 26.1	1 10 42.2	.21
25	13 3 28.40	3 33 28.2	.8084561	12 48.1	189 19 39.0	1 10 1.4	.21
26	13 2 8.43	3 26 20.8	.8066159	12 42.9	189 46 53.3	1 9 20.3	.21
27	13 0 46.95	3 19 8.0	.8049080	12 37.6	190 14 9.2	1 8 38.8	.21
28	12 59 24.09	3 11 50.7	.8033349	12 32.3	190 41 26.7	1 7 57.1	.21
29	12 57 59.98	3 4 29.5	.8018996	12 26.9	191 8 45.7	1 7 15.1	.21
30	12 56 34.79	2 57 5.6	.8006043	12 21.6	191 36 6.4	1 6 32.7	.21
31	12 55 8.69	2 49 40.0	.7994509	12 16.2	192 3 28.6	1 5 50.1	.21
32	12 53 41.83	S. 2 42 13.5	9.7984410	12 10.8	192 30 52.5	N. 1 5 7.1	0.21

MARCH, 1856.

At Transit over the Meridian of Greenwich.

Parent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
34° 56'	— 0° 78'	0° 39'	S. 5 30 3' 2"	+ 5' 7"	5' 8"	11' 2"
14° 27'	0° 91'	0° 39'	5 27 38' 3"	6' 4"	5' 8"	11' 3"
51° 03'	1° 03'	0° 40'	5 24 58' 2"	7' 0"	5' 9"	11' 4"
24° 84'	1° 15'	0° 40'	5 22 2' 7"	7' 6"	6' 0"	11' 5"
55° 69'	1° 28'	0° 40'	5 18 52' 1"	8' 3"	6' 0"	11' 6"
23° 59'	1° 40'	0° 41'	5 15 26' 5"	8' 9"	6' 1"	11' 7"
48° 56'	1° 52'	0° 41'	5 11 46' 1"	9' 5"	6' 1"	11' 8"
10° 62'	1° 64'	0° 42'	5 7 51' 0"	10' 1"	6' 2"	11' 9"
29° 77'	1° 76'	0° 42'	5 3 41' 5"	10' 7"	6' 2"	12' 0"
46° 05'	1° 88'	0° 42'	4 59 17' 8"	11' 3"	6' 3"	12' 1"
59° 50'	2° 00'	0° 42'	4 54 40' 2"	11' 8"	6' 3"	12' 2"
10° 17'	2° 11'	0° 43'	4 49 49' 1"	12' 4"	6' 4"	12' 3"
18° 10'	2° 23'	0° 43'	4 44 44' 8"	12' 9"	6' 4"	12' 4"
23° 35'	2° 34'	0° 43'	4 39 27' 8"	13' 5"	6' 5"	12' 5"
25° 98'	2° 44'	0° 43'	4 33 58' 4"	14' 0"	6' 5"	12' 6"
26° 08'	2° 55'	0° 44'	4 28 17' 3"	14' 5"	6' 6"	12' 7"
23° 71'	2° 65'	0° 44'	4 22 24' 8"	14' 9"	6' 6"	12' 8"
18° 93'	2° 75'	0° 44'	4 16 21' 4"	15' 4"	6' 6"	12' 8"
11° 84'	2° 84'	0° 45'	4 10 7' 7"	15' 8"	6' 7"	12' 9"
2° 52'	2° 93'	0° 45'	4 3 44' 2"	16' 2"	6' 7"	13' 0"
51° 06'	3° 02'	0° 45'	3 57 11' 4"	16' 5"	6' 8"	13' 1"
37° 55'	3° 10'	0° 45'	3 50 30' 0"	16' 9"	6' 8"	13' 1"
22° 12'	3° 18'	0° 45'	3 43 40' 6"	17' 2"	6' 8"	13' 2"
4° 87'	3° 25'	0° 46'	3 36 44' 0"	17' 5"	6' 9"	13' 3"
45° 94'	3° 32'	0° 46'	3 29 40' 9"	17' 7"	6' 9"	13' 3"
25° 45'	3° 38'	0° 46'	3 22 32' 2"	18' 0"	6' 9"	13' 4"
3° 53'	3° 44'	0° 46'	3 15 18' 5"	18' 2"	6' 9"	13' 4"
40° 29'	3° 49'	0° 47'	3 8 0' 6"	18' 3"	7' 0"	13' 5"
15° 91'	3° 54'	0° 47'	3 0 39' 6"		7' 0"	13' 5"
50° 55'	3° 57'	0° 47'	2 53 16' 3"		7' 0"	1
24° 36'	3° 60'	0° 47'	2 45 51' 8"		7' 0"	1
57° 51'	— 3° 63'	0° 47'	S. 2 38			

APRIL, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	L. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N
1	12 53 41.83	S. 2 42 13.5	9.7984410	12 10.8	192 30 52.5	N. 1 5 7.1	0.21
2	12 52 14.38	2 34 47.2	.7975760	12 5.5	192 58 18.0	1 4 23.9	.21
3	12 50 46.51	2 27 22.1	.7968570	12 0.1	193 25 45.2	1 3 40.4	.21
4	12 49 18.39	2 19 59.1	.7962860	11 54.7	193 53 14.1	1 2 56.6	.21
5	12 47 50.20	2 12 39.4	.7958620	11 49.3	194 20 44.7	1 2 12.5	.21
6	12 46 22.12	2 5 24.0	.7955849	11 43.9	194 48 17.0	1 1 28.1	.21
7	12 44 54.33	1 58 13.9	.7954542	11 38.5	195 15 51.1	1 0 43.5	.21
8	12 43 26.98	1 51 10.0	.7954692	11 33.1	195 43 26.9	0 59 58.5	.21
9	12 42 0.25	1 44 13.3	.7956288	11 27.8	196 11 4.5	0 59 13.3	.21
10	12 40 34.34	1 37 25.0	.7959322	11 22.4	196 38 43.9	0 58 27.8	.21
11	12 39 9.39	1 30 45.9	.7963766	11 17.1	197 6 25.1	0 57 42.0	.21
12	12 37 45.55	1 24 16.7	.7969600	11 11.8	197 34 8.1	0 56 56.0	.21
13	12 36 22.97	1 17 58.3	.7976801	11 6.5	198 1 53.0	0 56 9.7	.21
14	12 35 1.79	1 11 51.4	.7985343	11 1.3	198 29 39.8	0 55 23.1	.21
15	12 33 42.15	1 5 56.7	.7995198	10 56.0	198 57 28.5	0 54 36.2	.21
16	12 32 24.21	1 0 15.1	.8006331	10 50.8	199 25 19.1	0 53 49.1	.21
17	12 31 8.07	0 54 47.2	.8018713	10 45.6	199 53 11.6	0 53 1.7	.21
18	12 29 53.84	0 49 33.4	.8032310	10 40.5	200 21 6.0	0 52 14.1	.21
19	12 28 41.63	0 44 34.2	.8047090	10 35.4	200 49 2.5	0 51 26.1	.21
20	12 27 31.56	0 39 50.2	.8063018	10 30.3	201 17 0.9	0 50 37.9	.21
21	12 26 23.71	0 35 21.9	.8080057	10 25.2	201 45 1.3	0 49 49.5	.21
22	12 25 18.17	0 31 9.6	.8098165	10 20.2	202 13 3.8	0 49 0.8	.21
23	12 24 15.04	0 27 13.7	.8117308	10 15.3	202 41 8.3	0 48 11.8	.21
24	12 23 14.38	0 23 34.5	.8137451	10 10.4	203 9 14.8	0 47 22.6	.21
25	12 22 16.27	0 20 12.4	.8158556	10 5.5	203 37 23.5	0 46 33.1	.21
26	12 21 20.78	0 17 7.6	.8180584	10 0.7	204 5 34.2	0 45 43.4	.21
27	12 20 27.97	0 14 20.4	.8203497	9 55.9	204 33 47.1	0 44 53.4	.21
28	12 19 37.89	0 11 51.0	.8227258	9 51.1	205 2 2.1	0 44 3.1	.21
29	12 18 50.60	0 9 39.5	.8251824	9 46.4	205 30 19.2	0 43 12.7	.21
30	12 18 6.13	0 7 46.2	.8277157	9 41.8	205 58 38.5	0 42 22.0	.21
31	12 17 24.54	S. 0 6 11.2	9.8303218	9 37.2	206 27 0.0	N. 0 41 31.0	0.0

APRIL, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
12 52 57.51	- 3.63	0.47	S. 2 38 27.0	+ 18.5	7.0	13.6
12 51 30.16	3.65	0.47	2 31 2.8	18.5	7.1	13.7
12 50 2.46	3.66	0.47	2 23 40.3	18.4	7.1	13.7
12 48 34.61	3.66	0.47	2 16 20.4	18.3	7.1	13.7
12 47 6.79	3.66	0.47	2 9 4.3	18.1	7.1	13.7
12 45 39.16	3.64	0.47	2 1 53.0	17.9	7.1	13.7
12 44 11.89	3.63	0.47	1 54 47.4	17.6	7.1	13.7
12 42 45.15	3.60	0.47	1 47 48.5	17.3	7.1	13.7
12 41 19.11	3.57	0.47	1 40 57.2	17.0	7.1	13.7
12 39 53.95	3.53	0.47	1 34 14.7	16.6	7.1	13.7
12 38 29.82	3.48	0.47	1 27 41.6	16.2	7.1	13.7
12 37 6.86	3.43	0.47	1 21 18.7	15.7	7.1	13.7
12 35 45.21	3.37	0.47	1 15 7.0	15.2	7.1	13.7
12 34 25.02	3.31	0.47	1 9 7.0	14.7	7.0	13.6
12 33 6.42	3.24	0.47	1 3 19.5	14.2	7.0	13.6
12 31 49.57	3.16	0.47	0 57 45.3	13.6	7.0	13.6
12 30 34.55	3.09	0.47	0 52 24.7	13.1	7.0	13.5
12 29 21.47	3.00	0.47	0 47 18.5	12.5	7.0	13.5
12 28 10.45	2.91	0.46	0 42 27.0	11.8	6.9	13.4
12 27 1.58	2.82	0.46	0 37 50.8	11.2	6.9	13.4
12 25 54.97	2.73	0.46	0 33 30.3	10.5	6.9	13.3
12 24 50.68	2.63	0.46	0 29 25.9	9.8	6.9	13.3
12 23 48.81	2.53	0.46	0 25 37.9	9.1	6.8	13.2
12 22 49.43	2.42	0.46	0 22 6.7	8.4	6.8	13.2
12 21 52.61	2.31	0.46	0 18 52.5	7.7	6.8	13.1
12 20 58.42	2.20	0.45	0 15 55.7	7.0	6.7	13.0
12 20 6.91	2.09	0.45	0 13 16.4	6.3	6.7	13.0
12 19 18.14	1.97	0.45	0 10 54.8	5.5	6.7	12.9
12 18 32.15	1.86	0.44	0 8 51.2	4.8	6.6	12.8
12 17 48.99	1.74	0.44	0 7 5.6	4.0	6.6	12.8
12 17 8.69	- 1.62	0.44	S. 0 5 38.3	+ 3.3	6.6	12.7

MAY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	L. Ra.
	Noon.	Noon.	Noon.		Noon.	Noon.	
1	h m s 12 17 24.54	S. o ' " 6 11.2	9.8303218	h m 9 37.2	o ' " 206 27 0.0	N. o ' " 41 31.0	o ' " 0 21
2	12 16 45.86	o 4 54.6	.8329967	9 32.6	206 55 23.7	o 40 39.8	.21
3	12 16 10.11	o 3 56.4	.8357365	9 28.1	207 23 49.6	o 39 48.4	.21
4	12 15 37.33	o 3 16.7	.8385375	9 23.7	207 52 17.7	o 38 56.8	.21
5	12 15 7.52	o 2 55.5	.8413954	9 19.3	208 20 48.1	o 38 4.9	.21
6	12 14 40.70	o 2 52.8	.8443064	9 14.9	208 49 20.8	o 37 12.8	.20
7	12 14 16.86	o 3 8.5	.8472667	9 10.6	209 17 55.8	o 36 20.5	.20
8	12 13 56.01	o 3 42.4	.8502727	9 6.3	209 46 33.1	o 35 27.9	.20
9	12 13 38.15	o 4 34.6	.8533207	9 2.1	210 15 12.7	o 34 35.2	.20
10	12 13 23.27	o 5 44.9	.8564066	8 58.0	210 43 54.7	o 33 42.2	.20
11	12 13 11.34	o 7 13.0	.8595275	8 53.9	211 12 39.1	o 32 49.0	.20
12	12 13 2.34	o 8 58.8	.8626801	8 49.8	211 41 25.8	o 31 55.6	.20
13	12 12 56.24	o 11 2.0	.8658614	8 45.8	212 10 14.9	o 31 2.0	.20
14	12 12 53.02	o 13 22.3	.8690684	8 41.8	212 39 6.5	o 30 8.2	.20
15	12 12 52.65	o 15 59.6	.8722982	8 37.9	213 8 0.5	o 29 14.2	.20
16	12 12 55.08	o 18 53.4	.8755474	8 34.0	213 36 57.0	o 28 20.0	.19
17	12 13 0.29	o 22 3.6	.8788144	8 30.2	214 5 55.9	o 27 25.6	.19
18	12 13 8.24	o 25 29.8	.8820967	8 26.4	214 34 57.4	o 26 31.0	.19
19	12 13 18.89	o 29 11.8	.8853923	8 22.7	215 4 1.3	o 25 36.2	.19
20	12 13 32.20	o 33 9.4	.8886989	8 19.0	215 33 7.8	o 24 41.2	.19
21	12 13 48.14	o 37 22.2	.8920147	8 15.3	216 2 16.9	o 23 46.0	.19
22	12 14 6.66	o 41 49.8	.8953378	8 11.7	216 31 28.5	o 22 50.7	.19
23	12 14 27.72	o 46 32.2	.8986666	8 8.1	217 0 42.7	o 21 55.1	.19
24	12 14 51.30	o 51 29.0	.9019993	8 4.6	217 29 59.5	o 20 59.4	.19
25	12 15 17.36	o 56 40.1	.9053343	8 1.1	217 59 18.9	o 20 3.5	.19
26	12 15 45.86	1 2 5.1	.9086701	7 57.7	218 28 40.9	o 19 7.4	.19
27	12 16 16.77	1 7 43.9	.9120052	7 54.3	218 58 5.6	o 18 11.2	.19
28	12 16 50.05	1 13 36.2	.9153386	7 50.9	219 27 33.0	o 17 14.8	.19
29	12 17 25.67	1 19 41.7	.9186686	7 47.6	219 57 3.0	o 16 18.2	.19
30	12 18 3.59	1 26 0.3	.9219938	7 44.3	220 26 35.7	o 15 21.4	.19
31	12 18 43.77	1 32 31.8	.9253129	7 41.0	220 56 11.1	o 14 24.5	.19
32	12 19 26.19	S. 1 39 15.9	9.9286247	7 37.8	221 25 49.3	N. o 13 27.5	o ' " 0 21

MAY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
12 17 8.69	- 1.62	0.44	S. 0 5 38.3	+ 3.3	6.6	12.7
12 16 31.29	1.50	0.43	0 4 29.2	2.5	6.5	12.6
12 15 56.82	1.37	0.43	0 3 38.5	1.7	6.5	12.5
12 15 25.31	1.25	0.43	0 3 6.2	1.0	6.4	12.4
12 14 56.75	1.13	0.43	0 2 52.3	+ 0.2	6.4	12.4
12 14 31.16	1.00	0.43	0 2 56.7	- 0.6	6.4	12.3
12 14 8.54	0.88	0.42	0 3 19.3	1.3	6.3	12.2
12 13 48.89	0.76	0.42	0 4 0.1	2.1	6.3	12.1
12 13 32.20	0.63	0.42	0 4 58.9	2.8	6.2	12.0
12 13 18.47	0.51	0.42	0 6 15.7	3.6	6.2	11.9
12 13 7.66	0.39	0.42	0 7 50.2	4.3	6.2	11.9
12 12 59.76	0.27	0.41	0 9 42.1	5.0	6.1	11.8
12 12 54.73	0.15	0.41	0 11 51.2	5.7	6.1	11.7
12 12 52.56	- 0.03	0.40	0 14 17.4	6.4	6.0	11.6
12 12 53.21	+ 0.08	0.40	0 17 0.2	7.1	6.0	11.5
12 12 56.63	0.20	0.40	0 19 59.5	7.8	5.9	11.4
12 13 2.80	0.31	0.39	0 23 14.9	8.5	5.8	11.3
12 13 11.68	0.43	0.39	0 26 46.2	9.1	5.8	11.3
12 13 23.23	0.54	0.39	0 30 33.0	9.8	5.8	11.2
12 13 37.42	0.65	0.38	0 34 35.3	10.4	5.7	11.1
12 13 54.21	0.75	0.38	0 38 52.6	11.0	5.7	11.0
12 14 13.56	0.86	0.38	0 43 24.6	11.6	5.6	10.9
12 14 35.43	0.96	0.38	0 48 11.2	12.2	5.6	10.8
12 14 59.79	1.07	0.38	0 53 12.1	12.8	5.6	10.8
12 15 26.61	1.17	0.37	0 58 27.1	13.4	5.5	10.7
12 15 55.85	1.27	0.37	1 3 56.0	14.0	5.5	10.6
12 16 27.47	1.37	0.37	1 9 38.4	14.5	5.4	10.5
12 17 1.44	1.46	0.37	1 15 34.2	15.1	5.4	10.4
12 17 37.73	1.56	0.36	1 21 42.2	15.6	5.3	10.3
12 18 16.30	1.65	0.36	1 28 1.1	16.1	5.3	10.3
12 18 57.11	1.75	0.36	1 34 10.0	16.6	5.2	10.2
12 19 40.14	+ 1.84	0.35	S. 1 40 18.9	17.1	5.1	10.1

JUNE, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	12 19 26.19	S. 1 39 15.9	9.9286247	7 37.8	221 25 49.3	N. 0 13 27.5	0.1945448
2	12 20 10.81	1 46 12.3	.9319279	7 34.6	221 55 30.2	0 12 30.3	.1942067
3	12 20 57.60	1 53 20.9	.9352215	7 31.5	222 25 13.9	0 11 32.9	.1938711
4	12 21 46.51	2 0 41.4	.9385043	7 28.4	222 55 0.4	0 10 35.4	.1935341
5	12 22 37.50	2 8 13.6	.9417752	7 25.3	223 24 49.6	0 9 37.8	.1931918
6	12 23 30.54	2 15 57.1	.9450332	7 22.3	223 54 41.7	0 8 40.0	.1928501
7	12 24 25.60	2 23 51.8	.9482773	7 19.3	224 24 36.6	0 7 42.1	.1925071
8	12 25 22.63	2 31 57.4	.9515068	7 16.3	224 54 34.3	0 6 44.1	.1921653
9	12 26 21.60	2 40 13.6	.9547205	7 13.3	225 24 34.9	0 5 46.0	.1918171
10	12 27 22.47	2 48 40.2	.9579179	7 10.4	225 54 38.3	0 4 47.7	.1914702
11	12 28 25.19	2 57 16.8	.9610985	7 7.5	226 24 44.6	0 3 49.4	.1911250
12	12 29 29.73	3 6 3.2	.9642616	7 4.7	226 54 53.8	0 2 50.9	.1907726
13	12 30 36.06	3 14 59.2	.9674068	7 1.9	227 25 6.0	0 1 52.3	.1904220
14	12 31 44.13	3 24 4.4	.9705337	6 59.1	227 55 21.1	N. 0 0 53.6	.1900702
15	12 32 53.91	3 33 18.6	.9736416	6 56.3	228 25 39.1	S. 0 0 5.2	.1897173
16	12 34 5.38	3 42 41.5	.9767306	6 53.6	228 56 0.0	0 1 4.0	.1893632
17	12 35 18.49	3 52 13.0	.9798004	6 50.9	229 26 24.0	0 2 3.0	.1890081
18	12 36 33.22	4 1 52.8	.9828507	6 48.2	229 56 51.0	0 3 2.1	.1886518
19	12 37 49.54	4 11 40.7	.9858815	6 45.5	230 27 20.9	0 4 1.2	.1882945
20	12 39 7.42	4 21 36.4	.9888925	6 42.9	230 57 53.9	0 5 0.4	.1879362
21	12 40 26.83	4 31 39.8	.9918839	6 40.3	231 28 29.9	0 5 59.7	.1875769
22	12 41 47.75	4 41 50.6	.9948555	6 37.7	231 59 9.0	0 6 59.1	.1872166
23	12 43 10.17	4 52 8.7	.9978071	6 35.1	232 29 51.2	0 7 58.5	.1868554
24	12 44 34.06	5 2 34.0	.0007386	6 32.6	233 0 36.4	0 8 58.0	.1864932
25	12 45 59.39	5 13 6.2	.0036500	6 30.1	233 31 24.7	0 9 57.5	.1861302
26	12 47 26.15	5 23 45.1	.0065411	6 27.6	234 2 16.1	0 10 57.1	.1857663
27	12 48 54.32	5 34 30.6	.0094122	6 25.1	234 33 10.6	0 11 56.8	.1854015
28	12 50 23.89	5 45 22.5	.0122629	6 22.7	235 4 8.3	0 12 56.5	.1850359
29	12 51 54.83	5 56 20.7	.0150929	6 20.3	235 35 9.1	0 13 56.2	.1846695
30	12 53 27.13	6 7 24.9	.0179022	6 17.9	236 6 13.0	0 14 55.9	.1843024
31	12 55 0.77	S. 6 18 35.0	.0206907	6 15.5	236 37 20.0	S. 0 15 55.7	0.1839345

MARS.

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JUNE, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
19 40' 14	+ 1' 84	0' 35	S. 1 41 27' 0	-17' 2	5' 2	10' 1
20 25' 35	1' 93	0' 35	1 48 26' 3	17' 7	5' 2	10' 0
21 12' 70	2' 02	0' 35	1 55 37' 8	18' 2	5' 2	10' 0
22 2' 16	2' 10	0' 34	2 3 1' 0	18' 7	5' 1	9' 9
22 53' 69	2' 19	0' 34	2 10 35' 7	19' 2	5' 1	9' 8
23 47' 24	2' 27	0' 33	2 18 21' 8	19' 6	5' 0	9' 7
24 42' 79	2' 36	0' 33	2 26 18' 8	20' 1	5' 0	9' 7
25 40' 29	2' 44	0' 33	2 34 26' 7	20' 5	5' 0	9' 6
26 39' 72	2' 52	0' 33	2 42 45' 0	21' 0	4' 9	9' 5
27 41' 02	2' 59	0' 33	2 51 13' 6	21' 4	4' 9	9' 4
28 44' 16	2' 67	0' 33	2 59 52' 1	21' 8	4' 9	9' 4
29 49' 11	2' 74	0' 32	3 8 40' 3	22' 2	4' 8	9' 3
30 55' 82	2' 82	0' 32	3 17 37' 9	22' 6	4' 8	9' 2
32 4' 26	2' 89	0' 32	3 26 44' 7	23' 0	4' 8	9' 2
33 14' 40	2' 96	0' 31	3 36 0' 4	23' 3	4' 7	9' 1
34 26' 21	3' 03	0' 31	3 45 24' 8	23' 7	4' 7	9' 0
35 39' 64	3' 09	0' 31	3 54 57' 6	24' 0	4' 7	9' 0
36 54' 69	3' 16	0' 31	4 4 38' 6	24' 4	4' 6	8' 9
38 11' 31	3' 22	0' 31	4 14 27' 6	24' 7	4' 6	8' 9
39 29' 48	3' 29	0' 31	4 24 24' 4	25' 0	4' 6	8' 8
40 49' 17	3' 35	0' 30	4 34 28' 8	25' 3	4' 5	8' 7
42 10' 37	3' 41	0' 30	4 44 40' 6	25' 6	4' 5	8' 7
43 33' 04	3' 48	0' 30	4 54 59' 6	25' 9	4' 4	8' 6
44 57' 18	3' 54	0' 30	5 5 25' 7	26' 2	4' 4	8' 6
46 22' 75	3' 60	0' 30	5 15 58' 6	26' 5	4' 4	8' 5
47 49' 75	3' 65	0' 29	5 26 38' 2	26' 8	4' 3	8' 4
49 18' 14	3' 71	0' 29	5 37 24' 3	27' 1	4' 3	8' 4
50 47' 93	3' 77	0' 29	5 48 06' 0	27' 3	4' 3	8' 3
52 19' 08	3' 83	0' 29	5	27' 6	4' 2	8' 3
53 51' 58	3' 88	0' 28	6	7' 8		8' 2
55 25' 41	+ 3' 94	0' 28	S.			

JUNE, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	12 19 26.19	S. 1 39 15.9	.9286247	7 37.8	221 25 49.3	N. 0 13 27.5	0.1945448
2	12 20 10.81	1 46 12.3	.9319279	7 34.6	221 55 30.2	0 12 30.3	.1942087
3	12 20 57.60	1 53 20.9	.9352215	7 31.5	222 25 13.9	0 11 32.9	.1938711
4	12 21 46.51	2 0 41.4	.9385043	7 28.4	222 55 0.4	0 10 35.4	.1935301
5	12 22 37.50	2 8 13.6	.9417752	7 25.3	223 24 49.6	0 9 37.8	.1931918
6	12 23 30.54	2 15 57.1	.9450332	7 22.3	223 54 41.7	0 8 40.0	.1928501
7	12 24 25.60	2 23 51.8	.9482773	7 19.3	224 24 36.6	0 7 42.1	.1925071
8	12 25 22.63	2 31 57.4	.9515068	7 16.3	224 54 34.3	0 6 44.1	.1921628
9	12 26 21.60	2 40 13.6	.9547205	7 13.3	225 24 34.9	0 5 46.0	.1918171
10	12 27 22.47	2 48 40.2	.9579179	7 10.4	225 54 38.3	0 4 47.7	.1914702
11	12 28 25.19	2 57 16.8	.9610985	7 7.5	226 24 44.6	0 3 49.4	.1911220
12	12 29 29.73	3 6 3.2	.9642616	7 4.7	226 54 53.8	0 2 50.9	.1907726
13	12 30 36.06	3 14 59.2	.9674068	7 1.9	227 25 6.0	0 1 52.3	.1904220
14	12 31 44.13	3 24 4.4	.9705337	6 59.1	227 55 21.1	N. 0 0 53.6	.1900701
15	12 32 53.91	3 33 18.6	.9736416	6 56.3	228 25 39.1	S. 0 0 5.2	.1897173
16	12 34 5.38	3 42 41.5	.9767306	6 53.6	228 56 0.0	0 1 4.0	.1893632
17	12 35 18.49	3 52 13.0	.9798004	6 50.9	229 26 24.0	0 2 3.0	.1890081
18	12 36 33.22	4 1 52.8	.9828507	6 48.2	229 56 51.0	0 3 2.1	.1886518
19	12 37 49.54	4 11 40.7	.9858815	6 45.5	230 27 20.9	0 4 1.2	.1882945
20	12 39 7.42	4 21 36.4	.9888925	6 42.9	230 57 53.9	0 5 0.4	.1879362
21	12 40 26.83	4 31 39.8	.9918839	6 40.3	231 28 29.9	0 5 59.7	.1875769
22	12 41 47.75	4 41 50.6	.9948555	6 37.7	231 59 9.0	0 6 59.1	.1872166
23	12 43 10.17	4 52 8.7	.9978071	6 35.1	232 29 51.2	0 7 58.5	.1868554
24	12 44 34.06	5 2 34.0	.0007386	6 32.6	233 0 36.4	0 8 58.0	.1864932
25	12 45 59.39	5 13 6.2	.0036500	6 30.1	233 31 24.7	0 9 57.5	.1861302
26	12 47 26.15	5 23 45.1	.0065411	6 27.6	234 2 16.1	0 10 57.1	.1857663
27	12 48 54.32	5 34 30.6	.0094122	6 25.1	234 33 10.6	0 11 56.8	.1854015
28	12 50 23.89	5 45 22.5	.0122629	6 22.7	235 4 8.3	0 12 56.5	.1850359
29	12 51 54.83	5 56 20.7	.0150929	6 20.3	235 35 9.1	0 13 56.2	.1846695
30	12 53 27.13	6 7 24.9	.0179022	6 17.9	236 6 13.0	0 14 55.9	.1843024
31	12 55 0.77	S. 6 18 35.0	.0206907	6 15.5	236 37 20.0	S. 0 15 55.7	0.1839345

JUNE, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 12 19 40·14	+ s 1·84	s 0·35	S. o ' " 1 41 27·0	" -17·2	" 5·2	" 10·1
2	12 20 25·35	1·93	0·35	1 48 26·3	17·7	5·2	10·0
3	12 21 12·70	2·02	0·35	1 55 37·8	18·2	5·2	10·0
4	12 22 2·16	2·10	0·34	2 3 1·0	18·7	5·1	9·9
5	12 22 53·69	2·19	0·34	2 10 35·7	19·2	5·1	9·8
6	12 23 47·24	2·27	0·33	2 18 21·8	19·6	5·0	9·7
7	12 24 42·79	2·36	0·33	2 26 18·8	20·1	5·0	9·7
8	12 25 40·29	2·44	0·33	2 34 26·7	20·5	5·0	9·6
9	12 26 39·72	2·52	0·33	2 42 45·0	21·0	4·9	9·5
10	12 27 41·02	2·59	0·33	2 51 13·6	21·4	4·9	9·4
11	12 28 44·16	2·67	0·33	2 59 52·1	21·8	4·9	9·4
12	12 29 49·11	2·74	0·32	3 8 40·3	22·2	4·8	9·3
13	12 30 55·82	2·82	0·32	3 17 37·9	22·6	4·8	9·2
14	12 32 4·26	2·89	0·32	3 26 44·7	23·0	4·8	9·2
15	12 33 14·40	2·96	0·31	3 36 0·4	23·3	4·7	9·1
16	12 34 26·21	3·03	0·31	3 45 24·8	23·7	4·7	9·0
17	12 35 39·64	3·09	0·31	3 54 57·6	24·0	4·7	9·0
18	12 36 54·69	3·16	0·31	4 4 38·6	24·4	4·6	8·9
19	12 38 11·31	3·22	0·31	4 14 27·6	24·7	4·6	8·9
20	12 39 29·48	3·29	0·31	4 24 24·4	25·0	4·6	8·8
21	12 40 49·17	3·35	0·30	4 34 28·8	25·3	4·5	8·7
22	12 42 10·37	3·41	0·30	4 44 40·6	25·6	4·5	8·7
23	12 43 33·04	3·48	0·30	4 54 59·6	25·9	4·4	8·6
24	12 44 57·18	3·54	0·30	5 5 25·7	26·2	4·4	8·6
25	12 46 22·75	3·60	0·30	5 15 58·6	26·5	4·4	8·5
26	12 47 49·75	3·65	0·29	5 26 38·2	26·8	4·3	8·4
27	12 49 18·14	3·71	0·29	5 37 24·3	27·1	4·3	8·4
28	12 50 47·93	3·77	0·29	5 48 16·8	27·3	4·3	8·3
29	12 52 19·08	3·83	0·29	5 59 15·5	27·6	4·3	8·3
30	12 53 51·58	3·88	0·28	6 10 20·2	27·8	4·2	8·2
31	12 55 25·41	+ 3·94	0·28	S. 6 21 30·7	-28·1	4·2	8·2

AUGUST, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "	0 .	h m	° ' "	0 .	
1	13 53 27.1	S. 12 35 52.3	0.0968533	5 11.6	253 9 2.1	S. 0 46 33.7	0.172266
2	13 55 11.88	12 48 30.6	.0990022	5 9.8	253 41 55.3	0 47 31.5	.1719513
3	13 57 22.04	13 1 8.7	.1011330	5 8.0	254 14 52.0	0 48 29.1	.1715791
4	13 59 33.18	13 13 46.5	.1032459	5 6.2	254 47 52.1	0 49 26.6	.171201
5	14 1 45.29	13 26 23.7	.1053411	5 4.5	255 20 55.7	0 50 23.9	.170827
6	14 3 58.37	13 39 0.1	.1074186	5 2.8	255 54 2.7	0 51 21.0	.17045
7	14 6 12.42	13 51 35.5	.1094785	5 1.1	256 27 13.1	0 52 17.9	.170
8	14 8 27.42	14 4 9.7	.1115209	4 59.4	257 0 26.9	0 53 14.6	.17
9	14 10 43.37	14 16 42.5	.1135462	4 57.7	257 33 44.2	0 54 11.1	
10	14 13 0.27	14 29 13.7	.1155544	4 56.1	258 7 4.9	0 55 7.4	
11	14 15 18.11	14 41 43.1	.1175459	4 54.4	258 40 29.1	0 56 3.5	
12	14 17 36.88	14 54 10.4	.1195208	4 52.8	259 13 56.7	0 56 59.4	
13	14 19 56.57	15 6 35.6	.1214794	4 51.2	259 47 27.7	0 57 55.0	
14	14 22 17.18	15 18 58.3	.1234218	4 49.6	260 21 2.2	0 58 50.4	
15	14 24 38.72	15 31 18.4	.1253484	4 48.0	260 54 40.1	0 59 45.6	
16	14 27 1.19	15 43 35.8	.1272596	4 46.5	261 28 21.4	1 0 40.5	
17	14 29 24.57	15 55 50.1	.1291554	4 44.9	262 2 6.2	1 1 35.1	
18	14 31 48.86	16 8 1.3	.1310363	4 43.4	262 35 54.4	1 2 29.5	
19	14 34 14.06	16 20 9.2	.1329024	4 41.9	263 9 46.0	1 3 23.6	
20	14 36 40.19	16 32 13.5	.1347542	4 40.4	263 43 41.0	1 4 17.4	
21	14 39 7.23	16 44 14.1	.1365917	4 38.9	264 17 39.5	1 5 11.0	
22	14 41 35.19	16 56 10.8	.1384151	4 37.4	264 51 41.4	1 6 4.2	.1
23	14 44 4.08	17 8 3.5	.1402245	4 35.9	265 25 46.7	1 6 57.2	.1
24	14 46 33.88	17 19 52.0	.1420201	4 34.5	265 59 55.4	1 7 49.8	.163
25	14 49 4.61	17 31 36.0	.1438020	4 33.1	266 34 7.5	1 8 42.1	.1634
26	14 51 36.26	17 43 15.5	.1455704	4 31.7	267 8 23.0	1 9 34.1	.1631
27	14 54 8.83	17 54 50.1	.1473253	4 30.3	267 42 41.9	1 10 25.8	.1627
28	14 56 42.33	18 6 19.8	.1490668	4 28.9	268 17 4.2	1 11 17.2	.1621
29	14 59 16.75	18 17 44.3	.1507948	4 27.5	268 51 29.9	1 12 8.2	.1621
30	15 1 52.08	18 29 3.4	.1525096	4 26.2	269 25 59.0	1 12 58.8	.161
31	15 4 28.32	18 40 16.8	.1542111	4 24.8	270 0 31.4	1 13 49.1	.161
32	15 7 5.48	S. 18 51 24.4	0.1558993	4 23.5	270 35 7.2	S. 1 14 39.0	0.161

AUGUST, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
30° 57'	+ 5'36"	0'25"	S. 12 38 36'4"	-31'6"	3'6"	6'9"
39' 79	5'40"	0'24"	12 51 13'7"	31'6"	3'5"	6'8"
50' 00	5'45"	0'24"	13 3 50'8"	31'5"	3'5"	6'8"
1' 19	5'49"	0'24"	13 16 27'5"	31'5"	3'5"	6'8"
13' 35	5'53"	0'24"	13 29 3'7"	31'5"	3'5"	6'7"
26' 48	5'57"	0'24"	13 41 39'0"	31'5"	3'5"	6'7"
40' 57	5'61"	0'24"	13 54 13'3"	31'4"	3'5"	6'7"
55' 61	5'65"	0'24"	14 6 46'3"	31'3"	3'4"	6'6"
11' 60	5'69"	0'24"	14 19 17'9"	31'3"	3'4"	6'6"
28' 53	5'73"	0'24"	14 31 47'9"	31'2"	3'4"	6'6"
46' 40	5'76"	0'24"	14 44 16'0"	31'1"	3'4"	6'5"
5' 20	5'80"	0'24"	14 56 42'1"	31'0"	3'4"	6'5"
24' 93	5'84"	0'24"	15 9 6'0"	30'9"	3'4"	6'5"
45' 57	5'88"	0'24"	15 21 27'4"	30'8"	3'4"	6'5"
7' 14	5'92"	0'23"	15 33 46'1"	30'7"	3'3"	6'4"
29' 64	5'96"	0'23"	15 46 2'1"	30'6"	3'3"	6'4"
53' 04	5'99"	0'23"	15 58 15'1"	30'5"	3'3"	6'4"
17' 36	6'03"	0'23"	16 10 24'8"	30'3"	3'3"	6'3"
42' 59	6'07"	0'23"	16 22 31'2"	30'2"	3'3"	6'3"
8' 74	6'11"	0'23"	16 34 34'1"	30'0"	3'3"	6'3"
35' 81	6'15"	0'23"	16 46 33'2"	29'9"	3'3"	6'3"
3' 80	6'19"	0'23"	16 58 28'5"	29'7"	3'2"	6'2"
32' 71	6'22"	0'23"	17 10 19'6"	29'5"	3'2"	6'2"
2' 54	6'26"	0'23"	17 22 6'5"	29'4"	3'2"	6'2"
33' 30	6'30"	0'23"	17	29'2"	3'2"	6'2"
4' 97	6'34"	0'23"	1'	29'0"	3'2"	6'1"
37' 57	6'38"	0'23"	1	28'8"	3'	6'1"
11' 09	6'42"	0'23"		8'6"		6'1"
45' 53	6'45"	0'23"		'3"		'1"
20' 89	6'49"	0'22"		'1"		'1"
57' 16	6'53"	0'22"		9"		
34' 34	+ 6'57"	0'22"				

SEPTEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
	h m s	° ' "		h m	° ' "	° ' "	
1	15 7 5.48	S. 18 51 24.4	0.1558993	4 23.5	270 35 7.2	S. 1 14 39.0	0.161
2	15 9 43.55	19 2 26.0	.1575744	4 22.2	271 9 46.4	1 15 28.6	.160
3	15 12 22.52	19 13 21.4	.1592305	4 20.9	271 44 28.9	1 16 17.7	.160
4	15 15 2.39	19 24 10.2	.1608858	4 19.6	272 19 14.8	1 17 6.5	.159
5	15 17 43.15	19 34 52.3	.1625224	4 18.4	272 54 4.0	1 17 54.9	.159
6	15 20 24.79	19 45 27.5	.1641464	4 17.1	273 28 56.5	1 18 42.9	.159
7	15 23 7.31	19 55 55.5	.1657578	4 15.9	274 3 52.3	1 19 30.4	.158
8	15 25 50.71	20 6 16.1	.1673570	4 14.7	274 38 51.4	1 20 17.6	.158
9	15 28 34.97	20 16 29.2	.1689442	4 13.5	275 13 53.7	1 21 4.3	.158
10	15 31 20.10	20 26 34.5	.1705197	4 12.3	275 48 59.3	1 21 50.6	.157
11	15 34 6.09	20 36 31.8	.1720836	4 11.1	276 24 8.2	1 22 36.4	.157
12	15 36 52.92	20 46 20.8	.1736361	4 10.0	276 59 20.3	1 23 21.8	.157
13	15 39 40.59	20 56 1.4	.1751776	4 8.8	277 34 35.6	1 24 6.7	.155
14	15 42 29.11	21 5 33.4	.1767082	4 7.7	278 9 54.1	1 24 51.2	.155
15	15 45 18.46	21 14 56.6	.1782282	4 6.6	278 45 15.8	1 25 35.1	.155
16	15 48 8.65	21 24 10.7	.1797378	4 5.5	279 20 40.7	1 26 18.6	.155
17	15 50 59.67	21 33 15.7	.1812371	4 4.4	279 56 8.7	1 27 1.6	.155
18	15 53 51.51	21 42 11.2	.1827264	4 3.3	280 31 39.8	1 27 44.2	.155
19	15 56 44.17	21 50 57.2	.1842059	4 2.3	281 7 14.1	1 28 26.2	.155
20	15 59 37.65	21 59 33.3	.1856758	4 1.2	281 42 51.5	1 29 7.7	.155
21	16 2 31.95	22 7 59.5	.1871360	4 0.2	282 18 32.0	1 29 48.7	.155
22	16 5 27.06	22 16 15.6	.1885868	3 59.2	282 54 15.5	1 30 29.1	.155
23	16 8 22.97	22 24 21.3	.1900282	3 58.2	283 30 2.1	1 31 9.1	.155
24	16 11 19.69	22 32 16.4	.1914603	3 57.2	284 5 51.7	1 31 48.5	.155
25	16 14 17.21	22 40 0.8	.1928834	3 56.2	284 41 44.3	1 32 27.4	.155
26	16 17 15.51	22 47 34.3	.1942973	3 55.2	285 17 39.9	1 33 5.7	.155
27	16 20 14.59	22 54 56.7	.1957022	3 54.2	285 53 38.5	1 33 43.5	.155
28	16 23 14.45	23 2 7.7	.1970980	3 53.3	286 29 40.1	1 34 20.7	.155
29	16 26 15.07	23 9 7.2	.1984848	3 52.4	287 5 44.5	1 34 57.3	.155
30	16 29 16.43	23 15 55.0	.1998627	3 51.5	287 41 51.9	1 35 33.4	.155
31	16 32 18.54	S. 23 22 30.8	0.2012316	3 50.6	288 18 2.2	S. 1 36 8.9	0.155

SEPTEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
m s	+ s	s	S. ° ' "	"	"	"
7 34.34	6.57	0.22	18 53 26.0	-27.6	3.1	6.0
10 12.43	6.61	0.22	19 4 25.8	27.4	3.1	6.0
12 51.42	6.64	0.22	19 15 19.4	27.1	3.1	5.9
15 31.31	6.68	0.22	19 26 6.5	26.8	3.1	5.9
18 12.08	6.72	0.22	19 36 46.8	26.5	3.1	5.9
20 53.75	6.75	0.22	19 47 20.2	26.2	3.1	5.9
23 36.29	6.79	0.22	19 57 46.4	25.9	3.1	5.9
26 19.70	6.83	0.21	20 8 5.1	25.6	3.0	5.8
29 3.98	6.86	0.21	20 18 16.3	25.3	3.0	5.8
31 49.12	6.90	0.21	20 28 19.7	25.0	3.0	5.8
34 35.12	6.93	0.21	20 38 15.1	24.6	3.0	5.8
37 21.97	6.97	0.21	20 48 2.2	24.3	3.0	5.8
40 9.66	7.00	0.21	20 57 40.9	23.9	3.0	5.7
42 58.19	7.04	0.21	21 7 10.9	23.6	3.0	5.7
45 47.55	7.07	0.21	21 16 32.1	23.2	3.0	5.7
48 37.75	7.11	0.21	21 25 44.3	22.8	3.0	5.7
51 28.78	7.14	0.21	21 34 47.2	22.4	3.0	5.7
54 20.63	7.18	0.21	21 43 40.8	22.0	2.9	5.6
57 13.30	7.21	0.21	21 52 24.7	21.6	2.9	5.6
0 6.79	7.25	0.21	22 0 58.8	21.2	2.9	5.6
3 1.10	7.28	0.21	22 9 23.0	20.8	2.9	5.6
5 56.22	7.31	0.21	22 17 37.0	20.3	2.9	5.6
8 52.14	7.35	0.20	22 25 40.6	19.9	2.8	5.5
11 48.87	7.38	0.20	22 33 33.6	19.5	2.8	5.5
14 46.40	7.41	0.20	22 41 1.1		2.8	5.5
17 44.71	7.45	0.20	22 48 1.1		2.8	
20 43.80	7.48	0.20	22 56 1.1		2.8	
23 43.66	7.51	0.20	23 3 1.1		2.8	
26 44.28	7.54	0.20	23 11 1.1		1.8	
29 45.65	7.57	0.20	23 19 1.1		8	
32 47.76	+ 7.60	0.20	S. 23			

OCTOBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. V.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 16 32 18.54	S. 23 22 30.8	0.2012316	h m 3 50.6	288 18 2.2	S. 1 36 8.9	.15144
2	16 35 21.37	23 28 54.6	.2025916	3 49.7	288 54 15.3	1 36 43.7	.15116
3	16 38 24.92	23 35 6.0	.2039430	3 48.8	289 30 31.2	1 37 18.0	.15088
4	16 41 29.17	23 41 4.9	.2052858	3 47.9	290 6 50.0	1 37 51.7	.15061
5	16 44 34.10	23 46 51.1	.2066201	3 47.1	290 43 11.5	1 38 24.8	.15033
6	16 47 39.71	23 52 24.5	.2079460	3 46.2	291 19 35.8	1 38 57.2	.15006
7	16 50 45.97	23 57 44.8	.2092636	3 45.4	291 56 2.8	1 39 29.0	.1498
8	16 53 52.88	24 2 51.9	.2105732	3 44.5	292 32 32.6	1 40 0.2	.149
9	16 57 0.41	24 7 45.6	.2118749	3 43.7	293 9 5.0	1 40 30.7	.145
10	17 0 8.55	24 12 25.8	.2131690	3 42.9	293 45 40.1	1 41 0.6	.14
11	17 3 17.30	24 16 52.3	.2144556	3 42.1	294 22 17.8	1 41 29.8	.1
12	17 6 26.63	24 21 5.0	.2157349	3 41.4	294 58 58.0	1 41 58.4	.1
13	17 9 36.52	24 25 3.7	.2170071	3 40.6	295 35 40.8	1 42 26.3	.3
14	17 12 46.97	24 28 48.2	.2182724	3 39.8	296 12 26.2	1 42 53.5	.5
15	17 15 57.97	24 32 18.4	.2195309	3 39.0	296 49 14.1	1 43 20.0	.0
16	17 19 9.49	24 35 34.3	.2207829	3 38.3	297 26 4.4	1 43 45.9	.9
17	17 22 21.53	24 38 35.6	.2220284	3 37.5	298 2 57.1	1 44 11.1	.1
18	17 25 34.07	24 41 22.3	.2232676	3 36.8	298 39 52.3	1 44 35.6	.6
19	17 28 47.10	24 43 54.2	.2245008	3 36.1	299 16 49.8	1 44 59.4	.4
20	17 32 0.60	24 46 11.3	.2257279	3 35.4	299 53 49.7	1 45 22.5	.5
21	17 35 14.57	24 48 13.4	.2269491	3 34.7	300 30 51.8	1 45 44.9	.9
22	17 38 28.98	24 50 0.3	.2281643	3 34.0	301 7 56.2	1 46 6.1	.1
23	17 41 43.82	24 51 32.0	.2293736	3 33.3	301 45 2.9	1 46 27.1	.1
24	17 44 59.08	24 52 48.3	.2305771	3 32.6	302 22 11.7	1 46 47.1	.1
25	17 48 14.75	24 53 49.2	.2317749	3 31.9	302 59 22.7	1 47 7.1	.1
26	17 51 30.80	24 54 34.6	.2329669	3 31.3	303 36 35.9	1 47 26.1	.1
27	17 54 47.21	24 55 4.3	.2341532	3 30.6	304 13 51.1	1 47 44.1	.1
28	17 58 3.97	24 55 18.4	.2353337	3 29.9	304 51 8.3	1 48 1.1	.1
29	18 1 21.05	24 55 16.6	.2365085	3 29.2	305 28 27.6	1 48 17.1	.1
30	18 4 38.44	24 54 59.0	.2376777	3 28.6	306 5 48.9	1 48 33.1	.1
31	18 7 56.12	24 54 25.4	.2388411	3 28.0	306 43 12.1	1 48 48.1	.1
32	18 11 14.06	S. 24 53 35.9	0.2399990	3 27.3	307 20 37.2	S. 1 49 2.9	.9

OCTOBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
m s	s	s	° ' "	"	"	"
2 47.76	+ 7.60	0.20	S. 23 23 33.1	-16.2	2.8	5.4
5 50.60	7.63	0.20	23 29 54.6	15.6	2.8	5.4
8 54.15	7.66	0.20	23 36 3.8	15.1	2.8	5.4
1 58.39	7.69	0.20	23 42 0.5	14.6	2.7	5.3
5 3.32	7.72	0.20	23 47 44.5	14.1	2.7	5.3
8 8.93	7.75	0.20	23 53 15.7	13.5	2.7	5.3
1 15.18	7.77	0.20	23 58 33.7	13.0	2.7	5.3
4 22.08	7.80	0.20	24 3 38.6	12.4	2.7	5.3
7 29.60	7.83	0.20	24 8 30.1	11.9	2.7	5.3
0 37.74	7.85	0.20	24 13 8.0	11.3	2.7	5.3
3 46.47	7.88	0.20	24 17 32.2	10.7	2.7	5.2
6 55.78	7.90	0.20	24 21 42.6	10.1	2.7	5.2
0 5.66	7.92	0.20	24 25 39.0	9.6	2.7	5.2
3 16.09	7.95	0.20	24 29 21.2	9.0	2.7	5.2
6 27.07	7.97	0.20	24 32 49.1	8.4	2.7	5.2
9 38.57	7.99	0.20	24 36 2.7	7.8	2.7	5.2
2 50.59	8.01	0.19	24 39 1.7	7.2	2.6	5.1
6 3.10	8.03	0.19	24 41 46.1	6.5	2.6	5.1
9 16.10	8.05	0.19	24 44 15.8	5.9	2.6	5.1
2 29.58	8.07	0.19	24 46 30.5	5.3	2.6	5.1
5 43.52	8.09	0.19	24 48 30.2	4.7	2.6	5.1
8 57.90	8.11	0.19	24 50 14.8	4.0	2.6	5.1
2 12.72	8.13	0.19	24 51 44.2	3.4	2.6	5.1
5 27.94	8.14	0.19	24 52 58.3	2.8	2.6	5.0
8 43.57	8.16	0.19	24 53 56.9	2.1	2.6	5.0
1 59.59	8.17	0.19	24 54 39.9	1.5	2.6	5.0
5 15.96	8.19	0.19	24 55 7.4	0.8	2.6	5.0
8 32.68	8.20	0.19	24 55 19.1	- 0.2	2.6	5.0
1 49.72	8.22	0.19	24 55 15.0	+ 0.5	2.6	5.0
5 7.06	8.23	0.19	24 54 55.1	1.2	2.6	5.0
8 24.69	8.24	0.18	24 54 19.3	1.8	2.5	4.9
1 42.58	+ 8.25	0.18	S. 24 53 27.5	+ 2.5	2.5	4.9

NOVEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vet.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	18 11 14.06	S. 24 53 35.9	0.2399990	3 27.3	307 20 37.2	S. 1 49 2.9	0.1441926
2	18 14 32.25	24 52 30.3	.2411514	3 26.7	307 58 4.2	1 49 16.4	.1440156
3	18 17 50.66	24 51 8.6	.2422983	3 26.0	308 35 33.0	1 49 29.2	.1438416
4	18 21 9.27	24 49 30.8	.2434400	3 25.4	309 13 3.6	1 49 41.2	.1436735
5	18 24 28.06	24 47 36.8	.2445764	3 24.8	309 50 35.9	1 49 52.4	.1435083
6	18 27 47.00	24 45 26.6	.2457077	3 24.2	310 28 9.9	1 50 2.8	.1433472
7	18 31 6.08	24 43 0.2	.2468340	3 23.5	311 5 45.6	1 50 12.4	.1431902
8	18 34 25.28	24 40 17.5	.2479555	3 22.9	311 43 22.9	1 50 21.3	.1430372
9	18 37 44.58	24 37 18.6	.2490723	3 22.3	312 21 1.8	1 50 29.3	.1428885
10	18 41 3.96	24 34 3.4	.2501846	3 21.7	312 58 42.2	1 50 36.6	.1427435
11	18 44 23.40	24 30 32.0	.2512925	3 21.1	313 36 24.1	1 50 43.1	.1426028
12	18 47 42.88	24 26 44.4	.2523962	3 20.4	314 14 7.5	1 50 48.8	.1424663
13	18 51 2.39	24 22 40.5	.2534958	3 19.8	314 51 52.3	1 50 53.7	.1423339
14	18 54 21.91	24 18 20.5	.2545914	3 19.2	315 29 38.4	1 50 57.7	.1422058
15	18 57 41.42	24 13 44.3	.2556831	3 18.6	316 7 25.9	1 51 1.0	.1420819
16	19 1 0.91	24 8 52.0	.2567711	3 18.0	316 45 14.7	1 51 3.5	.1419623
17	19 4 20.37	24 3 43.6	.2578553	3 17.4	317 23 4.6	1 51 5.1	.1418469
18	19 7 39.78	23 58 19.2	.2589361	3 16.7	318 0 55.8	1 51 6.0	.1417358
19	19 10 59.13	23 52 38.8	.2600133	3 16.1	318 38 48.1	1 51 6.1	.1416290
20	19 14 18.39	23 46 42.4	.2610869	3 15.5	319 16 41.5	1 51 5.3	.1415265
21	19 17 37.56	23 40 30.1	.2621570	3 14.9	319 54 36.0	1 51 3.7	.1414284
22	19 20 56.62	23 34 2.0	.2632235	3 14.2	320 32 31.4	1 51 1.3	.1413347
23	19 24 15.55	23 27 18.1	.2642865	3 13.6	321 10 27.8	1 50 58.2	.1412453
24	19 27 34.34	23 20 18.4	.2653459	3 13.0	321 48 25.1	1 50 54.2	.1411603
25	19 30 52.98	23 13 3.1	.2664017	3 12.3	322 26 23.2	1 50 49.4	.1410798
26	19 34 11.44	23 5 32.3	.2674539	3 11.7	323 4 22.2	1 50 43.8	.1410037
27	19 37 29.71	22 57 46.0	.2685025	3 11.1	323 42 21.9	1 50 37.4	.1409320
28	19 40 47.78	22 49 44.3	.2695476	3 10.4	324 20 22.4	1 50 30.2	.1408647
29	19 44 5.63	22 41 27.3	.2705891	3 9.8	324 58 23.5	1 50 22.2	.1408019
30	19 47 23.24	22 32 55.2	.2716269	3 9.1	325 36 25.3	1 50 13.4	.1407436
31	19 50 40.60	S. 22 24 8.0	0.2726612	3 8.5	326 14 27.6	S. 1 50 3.7	0.1406898

MARS.

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NOVEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
18 11 42.58	+ 8.25	0.18	S. 24 53 27.5	+ 2.5	2.5	4.9
18 15 0.72	8.26	0.18	24 52 19.6	3.2	2.5	4.9
18 18 19.07	8.27	0.18	24 50 55.6	3.8	2.5	4.9
18 21 37.62	8.28	0.18	24 49 15.5	4.5	2.5	4.9
18 24 56.34	8.28	0.18	24 47 19.3	5.2	2.5	4.9
18 28 15.22	8.29	0.18	24 45 6.8	5.9	2.5	4.9
18 31 34.23	8.29	0.18	24 42 38.2	6.5	2.5	4.9
18 34 53.36	8.30	0.18	24 39 53.3	7.2	2.5	4.8
18 38 12.59	8.30	0.18	24 36 52.1	7.9	2.5	4.8
18 41 31.89	8.31	0.18	24 33 34.8	8.6	2.5	4.8
18 44 51.25	8.31	0.18	24 30 1.2	9.2	2.5	4.8
18 48 10.65	8.31	0.18	24 26 11.4	9.9	2.5	4.8
18 51 30.07	8.31	0.18	24 22 5.4	10.6	2.5	4.8
18 54 49.50	8.31	0.18	24 17 43.2	11.3	2.5	4.8
18 58 8.93	8.31	0.18	24 13 4.9	11.9	2.5	4.8
19 1 28.33	8.31	0.17	24 8 10.5	12.6	2.4	4.7
19 4 47.70	8.31	0.17	24 3 0.1	13.3	2.4	4.7
19 8 7.02	8.30	0.17	23 57 33.6	13.9	2.4	4.7
19 11 26.27	8.30	0.17	23 51 51.2	14.6	2.4	4.7
19 14 45.44	8.30	0.17	23 45 52.8	15.3	2.4	4.7
19 18 4.51	8.29	0.17	23 39 38.5	15.9	2.4	4.7
19 21 23.46	8.29	0.17	23 33 8.4	16.6	2.4	4.7
19 24 42.29	8.28	0.17	23 26 22.6	17.2	2.4	4.7
19 28 0.97	8.28	0.17	23 19 21.0	17.9	2.4	4.7
19 31 19.50	8.27	0.17	23 12 3.8	18.5	2.4	4.6
19 34 37.85	8.26	0.17	23 4 31.1	19.1	2.4	4.6
19 37 56.01	8.25	0.17	22 56 42.9	19.7	2.4	4.6
19 41 13.96	8.24	0.17	22 48 30.4	20.3	2.4	4.6
19 44 31.69	8.23	0.17	22 40	20.9	2.4	4.6
19 47 49.18	8.22	0.17	22 3	21.5	2.4	4.6
19 51 6.42	+ 8.21	0.17	S. 22	22.1	2.4	4.6

DECEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	19 50 40.60	S. 22 24 8.0	0.2726612	3 8.5	326 14 27.6	S. 1 50 3.7	0.1406898
2	19 53 57.70	22 15 5.9	.2736921	3 7.8	326 52 30.5	1 49 53.2	.1406404
3	19 57 14.51	22 5 49.0	.2747195	3 7.2	327 30 33.9	1 49 42.0	.1405956
4	20 0 31.03	21 56 17.5	.2757435	3 6.5	328 8 37.7	1 49 29.9	.1405552
5	20 3 47.24	21 46 31.5	.2767641	3 5.8	328 46 41.9	1 49 17.0	.1405194
6	20 7 3.13	21 36 31.1	.2777815	3 5.2	329 24 46.5	1 49 3.3	.1404881
7	20 10 18.68	21 26 16.5	.2787958	3 4.5	330 2 51.3	1 48 48.8	.1404613
8	20 13 33.89	21 15 47.9	.2798071	3 3.8	330 40 56.4	1 48 33.5	.1404390
9	20 16 48.74	21 5 5.3	.2808155	3 3.1	331 19 1.7	1 48 17.4	.1404213
10	20 20 3.23	20 54 9.0	.2818210	3 2.4	331 57 7.2	1 48 0.5	.1404081
11	20 23 17.35	20 42 59.1	.2828239	3 1.7	332 35 12.8	1 47 42.7	.1403994
12	20 26 31.09	20 31 35.8	.2838243	3 1.0	333 13 18.4	1 47 24.2	.1403953
13	20 29 44.44	20 19 59.2	.2848221	3 0.2	333 51 24.1	1 47 4.9	.1403958
14	20 32 57.41	20 8 9.4	.2858174	2 59.5	334 29 29.7	1 46 44.9	.1404008
15	20 36 9.98	19 56 6.7	.2868103	2 58.8	335 7 35.2	1 46 24.0	.1404103
16	20 39 22.14	19 43 51.2	.2878008	2 58.0	335 45 40.6	1 46 2.3	.1404244
17	20 42 33.91	19 31 23.1	.2887890	2 57.3	336 23 45.8	1 45 39.9	.1404430
18	20 45 45.28	19 18 42.5	.2897749	2 56.5	337 1 50.8	1 45 16.7	.1404662
19	20 48 56.23	19 5 49.6	.2907585	2 55.8	337 39 55.5	1 44 52.7	.1404939
20	20 52 6.77	18 52 44.6	.2917396	2 55.0	338 17 59.8	1 44 28.0	.1405262
21	20 55 16.88	18 39 27.6	.2927183	2 54.2	338 56 3.8	1 44 2.5	.1405630
22	20 58 26.57	18 25 58.8	.2936946	2 53.4	339 34 7.3	1 43 36.2	.1406043
23	21 1 35.83	18 12 18.5	.2946684	2 52.7	340 12 10.4	1 43 9.2	.1406501
24	21 4 44.67	17 58 26.7	.2956396	2 51.9	340 50 13.0	1 42 41.4	.1407004
25	21 7 53.08	17 44 23.8	.2966082	2 51.1	341 28 14.9	1 42 12.9	.1407552
26	21 11 1.06	17 30 9.8	.2975742	2 50.3	342 6 16.3	1 41 43.7	.1408145
27	21 14 8.59	17 15 45.0	.2985375	2 49.4	342 44 17.0	1 41 13.7	.1408782
28	21 17 15.68	17 1 9.7	.2994980	2 48.6	343 22 17.0	1 40 43.0	.1409464
29	21 20 22.33	16 46 23.9	.3004559	2 47.8	344 0 16.2	1 40 11.5	.1410191
30	21 23 28.53	16 31 28.0	.3014109	2 46.9	344 38 14.6	1 39 39.3	.1410962
31	21 26 34.27	16 16 22.1	.3023631	2 46.1	345 16 12.2	1 39 6.4	.1411776
32	21 29 39.56	S. 16 1 6.4	0.3033127	2 45.2	345 54 8.8	S. 1 38 32.8	0.1412635

DECEMBER, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 19 51 6.42	+ s 8.21	s 0.17	S. 22 22 57.9	+ " 22.3	" 2.4	" 4.6
2	19 54 23.38	8.20	0.17	22 13 54.1	23.0	2.4	4.6
3	19 57 40.07	8.19	0.17	22 4 35.6	23.6	2.4	4.6
4	20 0 56.46	8.18	0.17	21 55 2.4	24.2	2.3	4.5
5	20 4 12.54	8.16	0.17	21 45 14.8	24.8	2.3	4.5
6	20 7 28.29	8.15	0.17	21 35 12.9	25.4	2.3	4.5
7	20 10 43.70	8.14	0.16	21 24 56.8	26.0	2.3	4.5
8	20 13 58.77	8.12	0.16	21 14 26.7	26.6	2.3	4.5
9	20 17 13.49	8.11	0.16	21 3 42.7	27.1	2.3	4.5
10	20 20 27.83	8.09	0.16	20 52 44.9	27.7	2.3	4.5
11	20 23 41.81	8.07	0.16	20 41 33.6	28.2	2.3	4.5
12	20 26 55.40	8.06	0.16	20 30 9.0	28.8	2.3	4.5
13	20 30 8.61	8.04	0.16	20 18 31.0	29.4	2.3	4.5
14	20 33 21.43	8.03	0.16	20 6 40.0	29.9	2.3	4.4
15	20 36 33.85	8.01	0.16	19 54 36.1	30.4	2.3	4.4
16	20 39 45.87	7.99	0.16	19 42 19.4	31.0	2.3	4.4
17	20 42 57.49	7.98	0.16	19 29 50.1	31.5	2.3	4.4
18	20 46 8.71	7.96	0.16	19 17 8.4	32.0	2.3	4.4
19	20 49 19.51	7.94	0.16	19 4 14.4	32.5	2.3	4.4
20	20 52 29.89	7.92	0.16	18 51 8.3	33.0	2.3	4.4
21	20 55 39.85	7.91	0.16	18 37 50.3	33.5	2.3	4.4
22	20 58 49.39	7.89	0.16	18 24 20.6	34.0	2.3	4.4
23	21 1 58.49	7.87	0.16	18 10 39.4	34.5	2.3	4.4
24	21 5 7.18	7.85	0.16	17 56 46.7	34.9	2.2	4.3
25	21 8 15.44	7.83	0.16	17 42 42.9	35.4	2.2	4.3
26	21 11 23.25	7.82	0.16	17 28 28.1	35.8	2.2	4.3
27	21 14 30.63	7.80	0.16	17 14 2.6	36.3	2.2	4.3
28	21 17 37.56	7.78	0.16	16 59 26.5			4.3
29	21 20 44.05	7.76	0.16	16 44 40.0			4.3
30	21 23 50.08	7.74	0.15	16 29 43.4			4.3
31	21 26 55.66	7.72	0.15	16 14 36.9			4.3
32	21 30 0.79	+ 7.70	0.15	S. 15 59 20.7			4.3

JUPITER.

JANUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	22 13 55.0	S. 12 8 34.0	0.7446800	3 31.4	339 36 20.2	S. 1 8 36.3	0.6979256
2	22 13 50.17	12 4 19.2	.7456208	3 28.1	339 41 45.4	1 8 39.9	.6979088
3	22 14 35.19	12 0 2.2	.7465483	3 24.9	339 47 10.7	1 8 43.6	.6978921
4	22 15 20.53	11 55 42.9	.7474625	3 21.7	339 52 36.0	1 8 47.2	.6978753
5	22 16 6.20	11 51 21.3	.7483632	3 18.6	339 58 1.4	1 8 50.8	.6978586
6	22 16 52.18	11 46 57.5	.7492503	3 15.4	340 3 26.7	1 8 54.4	.6978420
7	22 17 38.47	11 42 31.5	.7501238	3 12.2	340 8 52.1	1 8 58.0	.6978254
8	22 18 25.06	11 38 3.4	.7509835	3 9.1	340 14 17.5	1 9 1.6	.6978088
9	22 19 11.95	11 33 33.1	.7518293	3 5.9	340 19 42.9	1 9 5.1	.6977923
10	22 19 59.12	11 29 0.8	.7526612	3 2.8	340 25 8.4	1 9 8.7	.6977758
11	22 20 46.57	11 24 26.4	.7534790	2 59.6	340 30 33.9	1 9 12.2	.6977594
12	22 21 34.30	11 19 50.0	.7542828	2 56.5	340 35 59.4	1 9 15.8	.6977431
13	22 22 22.29	11 15 11.7	.7550724	2 53.3	340 41 24.9	1 9 19.3	.6977267
14	22 23 10.53	11 10 31.4	.7558479	2 50.2	340 46 50.4	1 9 22.8	.6977104
15	22 23 59.03	11 5 49.2	.7566091	2 47.1	340 52 16.0	1 9 26.3	.6976941
16	22 24 47.77	11 1 5.2	.7573561	2 44.0	340 57 41.6	1 9 29.8	.6976779
17	22 25 36.75	10 56 19.3	.7580888	2 40.8	341 3 7.2	1 9 33.3	.6976617
18	22 26 25.95	10 51 31.7	.7588072	2 37.7	341 8 32.9	1 9 36.8	.6976456
19	22 27 15.39	10 46 42.3	.7595112	2 34.6	341 13 58.5	1 9 40.3	.6976296
20	22 28 5.04	10 41 51.1	.7602008	2 31.5	341 19 24.2	1 9 43.7	.6976135
21	22 28 54.90	10 36 58.2	.7608759	2 28.4	341 24 49.9	1 9 47.2	.6975975
22	22 29 44.97	10 32 3.7	.7615366	2 25.3	341 30 15.7	1 9 50.6	.6975815
23	22 30 35.24	10 27 7.5	.7621830	2 22.2	341 35 41.5	1 9 54.0	.6975656
24	22 31 25.71	10 22 9.7	.7628149	2 19.1	341 41 7.3	1 9 57.4	.6975497
25	22 32 16.37	10 17 10.4	.7634322	2 16.0	341 46 33.1	1 10 0.9	.6975339
26	22 33 7.21	10 12 9.4	.7640351	2 12.9	341 51 58.9	1 10 4.3	.6975181
27	22 33 58.24	10 7 7.0	.7646233	2 9.8	341 57 24.7	1 10 7.6	.6975023
28	22 34 49.44	10 2 3.0	.7651969	2 6.8	342 2 50.6	1 10 11.0	.6974866
29	22 35 40.81	9 56 57.6	.7657559	2 3.7	342 8 16.5	1 10 14.4	.6974709
30	22 36 32.35	9 51 50.7	.7663001	2 0.6	342 13 42.4	1 10 17.7	.6974553
31	22 37 24.05	9 46 42.4	.7668296	1 57.5	342 19 8.4	1 10 21.1	.6974397
32	22 38 15.90	S. 9 41 32.8	0.7673442	1 54.5	342 24 34.3	S. 1 10 24.4	0.6974242

JANUARY, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 22 13 12.04	+ 1.85	s 1.22	° ' " S. 12 7 56.7	+ 10.6	" 16.6	" 1.5
2	22 13 56.66	1.87	1.22	12 3 42.2	10.7	16.6	1.5
3	22 14 41.62	1.88	1.22	11 59 25.4	10.7	16.6	1.5
4	22 15 26.91	1.89	1.22	11 55 6.4	10.8	16.5	1.5
5	22 16 12.52	1.91	1.22	11 50 45.1	10.9	16.5	1.5
6	22 16 58.44	1.92	1.22	11 46 21.5	11.0	16.5	1.5
7	22 17 44.67	1.93	1.21	11 41 55.9	11.1	16.4	1.5
8	22 18 31.20	1.95	1.21	11 37 28.0	11.2	16.4	1.5
9	22 19 18.02	1.96	1.21	11 32 58.1	11.3	16.4	1.5
10	22 20 5.13	1.97	1.20	11 28 26.1	11.4	16.3	1.5
11	22 20 52.51	1.98	1.20	11 23 52.1	11.5	16.3	1.5
12	22 21 40.16	1.99	1.20	11 19 16.0	11.5	16.3	1.5
13	22 22 28.08	2.00	1.19	11 14 38.1	11.6	16.2	1.5
14	22 23 16.25	2.01	1.19	11 9 58.2	11.7	16.2	1.5
15	22 24 4.67	2.02	1.19	11 5 16.4	11.8	16.2	1.5
16	22 24 53.33	2.03	1.19	11 0 32.8	11.9	16.1	1.5
17	22 25 42.23	2.04	1.18	10 55 47.3	11.9	16.1	1.5
18	22 26 31.36	2.05	1.18	10 51 0.1	12.0	16.1	1.5
19	22 27 20.71	2.06	1.17	10 46 11.1	12.1	16.0	1.5
20	22 28 10.27	2.07	1.17	10 41 20.4	12.1	16.0	1.5
21	22 29 0.05	2.08	1.17	10 36 28.0	12.2	16.0	1.5
22	22 29 50.03	2.09	1.16	10 31 33.9	12.3	15.9	1.5
23	22 30 40.22	2.09	1.16	10 26 38.2	12.4	15.9	1.5
24	22 31 30.60	2.10	1.16	10 21 40.9	12.4	15.9	1.5
25	22 32 21.16	2.11	1.16	10 16 42.0	12.5	15.9	1.5
26	22 33 11.92	2.12	1.16	10 11 41.6		15.9	1.5
27	22 34 2.85	2.13	1.16	10 6 39.6		15.9	1.5
28	22 34 53.96	2.13	1.16	10 1 36.0			
29	22 35 45.24	2.14	1.16	9 56			
30	22 36 36.67	2.15	1.16	9			
31	22 37 28.27	2.15	1.16	9			
32	22 38 20.03	+ 2.16	1.16	S. 9			

JUPITER.

FEBRUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "	°	h m	° ' "	° ' "	
1	22 38 15.90	S. 9 41 32.8	0.7673442	1 54.5	342 24 34.3	S. 1 10 24.4	0.6974242
2	22 39 7.90	9 36 21.7	0.7678440	1 51.4	342 30 0.3	1 10 27.8	0.6974087
3	22 40 0.04	9 31 9.4	0.7683288	1 48.3	342 35 26.3	1 10 31.1	0.6973933
4	22 40 52.32	9 25 55.8	0.7687986	1 45.2	342 40 52.4	1 10 34.4	0.6973778
5	22 41 44.73	9 20 40.9	0.7692535	1 42.2	342 46 18.4	1 10 37.7	0.6973625
6	22 42 37.27	9 15 24.8	0.7696933	1 39.1	342 51 44.5	1 10 41.0	0.6973471
7	22 43 29.93	9 10 7.5	0.7701181	1 36.1	342 57 10.6	1 10 44.2	0.6973318
8	22 44 22.69	9 4 49.1	0.7705278	1 33.0	343 2 36.7	1 10 47.5	0.6973166
9	22 45 15.57	8 59 29.6	0.7709224	1 29.9	343 8 2.8	1 10 50.7	0.6973014
10	22 46 8.55	8 54 9.1	0.7713019	1 26.9	343 13 29.0	1 10 54.0	0.6972862
11	22 47 1.62	8 48 47.6	0.7716664	1 23.8	343 18 55.2	1 10 57.2	0.6972711
12	22 47 54.78	8 43 25.0	0.7720157	1 20.8	343 24 21.4	1 11 0.4	0.6972560
13	22 48 48.03	8 38 1.6	0.7723500	1 17.8	343 29 47.6	1 11 3.6	0.6972409
14	22 49 41.36	8 32 37.2	0.7726692	1 14.7	343 35 13.8	1 11 6.8	0.6972259
15	22 50 34.76	8 27 12.0	0.7729733	1 11.7	343 40 40.1	1 11 10.0	0.6972110
16	22 51 28.23	8 21 45.9	0.7732624	1 8.6	343 46 6.4	1 11 13.2	0.6971961
17	22 52 21.77	8 16 19.0	0.7735364	1 5.6	343 51 32.7	1 11 16.4	0.6971812
18	22 53 15.37	8 10 51.3	0.7737955	1 2.5	343 56 59.1	1 11 19.5	0.6971663
19	22 54 9.03	8 5 22.9	0.7740395	0 59.5	344 2 25.4	1 11 22.6	0.6971515
20	22 55 2.74	7 59 53.8	0.7742686	0 56.5	344 7 51.8	1 11 25.8	0.6971368
21	22 55 56.49	7 54 24.0	0.7744827	0 53.4	344 13 18.2	1 11 28.9	0.6971221
22	22 56 50.28	7 48 53.6	0.7746819	0 50.4	344 18 44.6	1 11 32.0	0.6971074
23	22 57 44.12	7 43 22.5	0.7748662	0 47.4	344 24 11.0	1 11 35.1	0.6970927
24	22 58 37.98	7 37 50.9	0.7750355	0 44.3	344 29 37.5	1 11 38.2	0.6970781
25	22 59 31.88	7 32 18.7	0.7751898	0 41.3	344 35 4.0	1 11 41.3	0.6970635
26	23 0 25.80	7 26 46.0	0.7753291	0 38.2	344 40 30.5	1 11 44.3	0.6970490
27	23 1 19.74	7 21 12.8	0.7754535	0 35.2	344 45 57.0	1 11 47.4	0.6970345
28	23 2 13.70	7 15 39.1	0.7755629	0 32.2	344 51 23.5	1 11 50.4	0.6970200
29	23 3 7.68	7 10 5.0	0.7756572	0 29.1	344 56 50.0	1 11 53.5	0.6970056
30	23 4 1.66	S. 7 4 30.6	0.7757365	0 26.1	345 2 16.6	S. 1 11 56.5	0.6969912

JUPITER.

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FEBRUARY, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	h m s	s	s	° ' "	"	"	"
1	22 38 20.03	+ 2.16	1.16	S. 9 41 8.1	+ 12.9	15.8	1.5
2	22 39 11.93	2.17	1.16	9 35 57.6	13.0	15.8	1.5
3	22 40 3.97	2.17	1.16	9 30 45.9	13.0	15.8	1.5
4	22 40 56.15	2.18	1.15	9 25 32.8	13.1	15.8	1.5
5	22 41 48.46	2.18	1.15	9 20 18.5	13.1	15.8	1.5
6	22 42 40.89	2.19	1.14	9 15 3.0	13.2	15.7	1.5
7	22 43 33.44	2.19	1.14	9 9 46.3	13.2	15.7	1.5
8	22 44 26.11	2.20	1.14	9 4 28.5	13.3	15.7	1.5
9	22 45 18.88	2.20	1.14	8 59 9.6	13.3	15.7	1.5
10	22 46 11.75	2.20	1.14	8 53 49.7	13.4	15.7	1.5
11	22 47 4.71	2.21	1.14	8 48 28.8	13.4	15.7	1.5
12	22 47 57.77	2.21	1.14	8 43 6.9	13.4	15.7	1.4
13	22 48 50.91	2.22	1.13	8 37 44.1	13.5	15.6	1.4
14	22 49 44.13	2.22	1.13	8 32 20.4	13.5	15.6	1.4
15	22 50 37.42	2.22	1.13	8 26 55.8	13.6	15.6	1.4
16	22 51 30.78	2.22	1.13	8 21 30.4	13.6	15.6	1.4
17	22 52 24.21	2.23	1.13	8 16 4.2	13.6	15.6	1.4
18	22 53 17.70	2.23	1.13	8 10 37.1	13.6	15.6	1.4
19	22 54 11.25	2.23	1.13	8 5 9.3	13.7	15.6	1.4
20	22 55 4.84	2.23	1.13	7 59 40.9	13.7	15.6	1.4
21	22 55 58.49	2.24	1.13	7 54 11.8	13.7	15.6	1.4
22	22 56 52.17	2.24	1.12	7 48 42.0	13.8	15.5	1.4
23	22 57 45.89	2.24	1.12	7 43 11.6	13.8	15.5	1.4
24	22 58 39.64	2.24	1.12	7 37 40.7	13.8	15.5	1.4
25	22 59 33.42	2.24	1.12	7 32 9.0	13.8	15.5	1.4
26	23 0 27.23	2.24	1.12	7 26 37.0	13.8	15.5	1.4
27	23 1 21.06	2.24	1.12	7 21 0.0	13.8	15.5	1.4
28	23 2 14.91	2.24	1.12	7 15 30.0	13.8	15.5	1.4
29	23 3 8.77	2.24	1.12	7 10 0.0	13.8	15.5	1.4
30	23 4 2.64	+ 2.24	1.12	S. 7 4 0.0	13.8	15.5	1.4

MARCH, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	23 4 1'66 S.	7 4 30'60	0.7757365	0 26'1	345 2 16'6	S. 1 11 56'50	0.696
2	23 4 55'65	6 58 55'7	.7758008	0 23'0	345 7 43'2	1 11 59'5	.697
3	23 5 49'63	6 53 20'6	.7758500	0 20'0	345 13 9'8	1 12 2'5	.698
4	23 6 43'61	6 47 45'1	.7758841	0 17'0	345 18 36'5	1 12 5'5	.699
5	23 7 37'58	6 42 9'4	.7759031	0 13'9	345 24 3'1	1 12 8'5	.699
6	23 8 31'54	6 36 33'5	.7759070	0 10'9	345 29 29'8	1 12 11'4	.699
7	23 9 25'48	6 30 57'4	.7758958	0 7'9	345 34 56'5	1 12 14'4	.699
8	23 10 19'39	6 25 21'2	.7758696	0 4'8	345 40 23'2	1 12 17'3	.699
9	23 11 13'27	6 19 44'9	.7758284	{ ₂₃ 1'9}	345 45 50'0	1 12 20'3	.699
10	23 12 7'12	6 14 8'5	.7757721	23 55'7	345 51 16'7	1 12 23'2	.699
11	23 13 0'93	6 8 32'1	.7757008	23 52'7	345 56 43'5	1 12 26'1	.699
12	23 13 54'69	6 2 55'7	.7756145	23 49'6	346 2 10'3	1 12 29'0	.699
13	23 14 48'40	5 57 19'4	.7755134	23 46'6	346 7 37'1	1 12 31'9	.699
14	23 15 42'06	5 51 43'2	.7753973	23 43'5	346 13 4'0	1 12 34'8	.699
15	23 16 35'65	5 46 7'2	.7752665	23 40'5	346 18 30'9	1 12 37'7	.699
16	23 17 29'19	5 40 31'3	.7751209	23 37'5	346 23 57'7	1 12 40'5	.699
17	23 18 22'66	5 34 55'6	.7749606	23 34'4	346 29 24'6	1 12 43'4	.699
18	23 19 16'06	5 29 20'2	.7747856	23 31'4	346 34 51'6	1 12 46'2	.699
19	23 20 9'39	5 23 45'1	.7745960	23 28'3	346 40 18'5	1 12 49'1	.699
20	23 21 2'64	5 18 10'3	.7743917	23 25'3	346 45 45'5	1 12 51'9	.699
21	23 21 55'81	5 12 35'7	.7741728	23 22'2	346 51 12'5	1 12 54'7	.699
22	23 22 48'89	5 7 1'6	.7739393	23 19'2	346 56 39'5	1 12 57'5	.699
23	23 23 41'88	5 1 27'8	.7736912	23 16'1	347 2 6'5	1 13 0'3	.699
24	23 24 34'79	4 55 54'5	.7734286	23 13'1	347 7 33'6	1 13 3'1	.699
25	23 25 27'59	4 50 21'6	.7731514	23 10'0	347 13 0'7	1 13 5'8	.699
26	23 26 20'30	4 44 49'2	.7728596	23 6'9	347 18 27'8	1 13 8'6	.699
27	23 27 12'90	4 39 17'3	.7725533	23 3'9	347 23 54'9	1 13 11'4	.699
28	23 28 5'40	4 33 45'9	.7722324	23 0'8	347 29 22'1	1 13 14'1	.699
29	23 28 57'79	4 28 15'1	.7718970	22 57'8	347 34 49'2	1 13 16'8	.699
30	23 29 50'06	4 22 45'0	.7715470	22 54'7	347 40 16'4	1 13 19'5	.699
31	23 30 42'22	4 17 15'5	.7711825	22 51'6	347 45 43'6	1 13 22'3	.699
32	23 31 34'24 S.	4 11 46'70	0.7708035	22 48'5	347 51 10'8 S.	1 13 25'00	0.699

JUPITER.

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MARCH, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 23 4 2 ⁶ 64	+ 2 ² 24	1 ¹ 12	S. 7 4 24 ⁵	+ 13 ⁹	15 ⁵	1 ⁴
2	23 4 56 ⁵ 1	2 ² 24	1 ¹ 12	6 58 50 ³	13 ⁹	15 ⁵	1 ⁴
3	23 5 50 ³ 8	2 ² 24	1 ¹ 12	6 53 15 ⁹	13 ⁹	15 ⁵	1 ⁴
4	23 6 44 ² 5	2 ² 24	1 ¹ 12	6 47 41 ¹	14 ⁰	15 ⁵	1 ⁴
5	{ 23 7 33 ² 21 }	{ 2 ² 24 }	{ 1 ¹ 12 }	{ 6 42 6 ¹ 1 }	{ 14 ⁰ }	{ 15 ⁵ }	{ 1 ⁴ }
6	{ 23 8 31 ² 95 }	{ 2 ² 24 }	{ 1 ¹ 12 }	{ 6 36 30 ⁹ 9 }	{ 14 ⁰ }	{ 15 ⁵ }	{ 1 ⁴ }
7	23 10 19 ⁵ 7	2 ² 24	1 ¹ 12	6 25 20 ¹	14 ⁰	15 ⁵	1 ⁴
8	23 11 13 ³ 34	2 ² 24	1 ¹ 12	6 19 44 ⁵	14 ⁰	15 ⁵	1 ⁴
9	23 12 7 ⁰ 7	2 ² 24	1 ¹ 12	6 14 8 ⁸	14 ⁰	15 ⁵	1 ⁴
10	23 13 0 ⁷ 77	2 ² 24	1 ¹ 12	6 8 33 ¹	14 ⁰	15 ⁵	1 ⁴
11	23 13 54 ⁴ 1	2 ² 24	1 ¹ 12	6 2 57 ⁵	14 ⁰	15 ⁵	1 ⁴
12	23 14 48 ⁰ 1	2 ² 23	1 ¹ 12	5 57 21 ⁹	14 ⁰	15 ⁵	1 ⁴
13	23 15 41 ⁵ 6	2 ² 23	1 ¹ 12	5 51 46 ⁴	14 ⁰	15 ⁵	1 ⁴
14	23 16 35 ⁰ 4	2 ² 22	1 ¹ 12	5 46 11 ⁰	14 ⁰	15 ⁵	1 ⁴
15	23 17 28 ⁴ 7	2 ² 22	1 ¹ 12	5 40 35 ⁹	14 ⁰	15 ⁵	1 ⁴
16	23 18 21 ⁸ 3	2 ² 22	1 ¹ 12	5 35 0 ⁹	14 ⁰	15 ⁵	1 ⁴
17	23 19 15 ¹ 11	2 ² 22	1 ¹ 12	5 29 26 ²	13 ⁹	15 ⁵	1 ⁴
18	23 20 8 ³ 33	2 ² 22	1 ¹ 12	5 23 51 ⁸	13 ⁹	15 ⁶	1 ⁴
19	23 21 1 ⁴ 7	2 ² 22	1 ¹ 12	5 18 17 ⁶	13 ⁹	15 ⁶	1 ⁴
20	23 21 54 ⁵ 2	2 ² 21	1 ¹ 12	5 12 43 ⁸	13 ⁹	15 ⁶	1 ⁴
21	23 22 47 ⁵ 0	2 ² 21	1 ¹ 12	5 7 10 ⁴	13 ⁹	15 ⁶	1 ⁴
22	23 23 40 ³ 8	2 ² 20	1 ¹ 12	5 1 37 ³	13 ⁹	15 ⁶	1 ⁴
23	23 24 33 ¹ 7	2 ² 20	1 ¹ 12	4 56 4 ⁶	13 ⁹	15 ⁶	1 ⁴
24	23 25 25 ⁸ 7	2 ² 19	1 ¹ 12	4 50 32 ⁴	13 ⁸	15 ⁶	1 ⁴
25	23 26 18 ⁴ 7	2 ² 19	1 ¹ 12	4 45 0 ⁷	13 ⁸	15 ⁶	1 ⁴
26	23 27 10 ⁹ 7	2 ² 19	1 ¹ 12	4 39 29 ⁵	13 ⁸	15 ⁶	1 ⁴
27	23 28 3 ³ 6	2 ² 18	1 ¹ 12	4 33 58 ⁸	13 ⁸	15 ⁶	1 ⁴
28	23 28 55 ⁶ 4	2 ² 18	1 ¹ 12	4 28 28 ⁷	13 ⁷		1 ⁵
29	23 29 47 ⁸ 1	2 ² 17	1 ¹ 13	4 22 59 ²	13 ⁷		1 ⁵
30	23 30 39 ⁸ 5	2 ² 17	1 ¹ 13	4 17 30 ⁴	13 ⁷		1 ⁵
31	23 31 31 ⁷ 8	2 ² 16	1 ¹ 13	4 12 2 ³	13		1 ⁵
32	23 32 23 ⁵ 7	+ 2 ² 16	1 ¹ 13	S. 4 6 34 ⁹	+ 1		

APRIL, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
	h m s	° ' "		h m	° ' "	° ' "	
1	23 31 34.24	S. 4 11 46.7	0.7708035	22 48.5	347 51 10.8	S. 1 13 25.0	0.69
2	23 32 26.14	4 6 18.7	.7704100	22 45.5	347 56 38.1	1 13 27.6	.69
3	23 33 17.90	4 0 51.4	.7700020	22 42.4	348 2 5.3	1 13 30.3	.69
4	23 34 9.52	3 55 25.0	.7695795	22 39.3	348 7 32.6	1 13 33.0	.69
5	23 35 0.99	3 49 59.5	.7691427	22 36.2	348 12 59.9	1 13 35.6	.69
6	23 35 52.31	3 44 34.8	.7686915	22 33.2	348 18 27.2	1 13 38.3	.69
7	23 36 43.47	3 39 11.1	.7682259	22 30.1	348 23 54.6	1 13 40.9	.69
8	23 37 34.47	3 33 48.5	.7677461	22 27.0	348 29 21.9	1 13 43.5	.69
9	23 38 25.31	3 28 26.8	.7672520	22 23.9	348 34 49.3	1 13 46.1	.69
10	23 39 15.98	3 23 6.2	.7667437	22 20.8	348 40 16.7	1 13 48.7	.69
11	23 40 6.48	3 17 46.7	.7662214	22 17.7	348 45 44.2	1 13 51.3	.69
12	23 40 56.79	3 12 28.4	.7656850	22 14.6	348 51 11.6	1 13 53.9	.69
13	23 41 46.93	3 7 11.2	.7651346	22 11.5	348 56 39.1	1 13 56.5	.69
14	23 42 36.89	3 1 55.2	.7645703	22 8.4	349 2 6.6	1 13 59.0	.69
15	23 43 26.65	2 56 40.4	.7639922	22 5.3	349 7 34.1	1 14 1.6	.69
16	23 44 16.23	2 51 26.8	.7634003	22 2.1	349 13 1.6	1 14 4.1	.69
17	23 45 5.61	2 46 14.5	.7627947	21 59.0	349 18 29.2	1 14 6.6	.69
18	23 45 54.79	2 41 3.6	.7621754	21 55.9	349 23 56.7	1 14 9.1	.69
19	23 46 43.76	2 35 54.0	.7615425	21 52.8	349 29 24.3	1 14 11.6	.69
20	23 47 32.52	2 30 45.8	.7608959	21 49.7	349 34 51.9	1 14 14.1	.69
21	23 48 21.07	2 25 39.1	.7602357	21 46.5	349 40 19.5	1 14 16.6	.69
22	23 49 9.40	2 20 33.9	.7595620	21 43.4	349 45 47.1	1 14 19.1	.69
23	23 49 57.50	2 15 30.2	.7588747	21 40.3	349 51 14.8	1 14 21.5	.69
24	23 50 45.38	2 10 28.1	.7581739	21 37.1	349 56 42.5	1 14 24.0	.69
25	23 51 33.02	2 5 27.5	.7574597	21 34.0	350 2 10.2	1 14 26.4	.69
26	23 52 20.43	2 0 28.5	.7567321	21 30.8	350 7 37.9	1 14 28.8	.69
27	23 53 7.60	1 55 31.2	.7559910	21 27.7	350 13 5.7	1 14 31.2	.69
28	23 53 54.53	1 50 35.5	.7552366	21 24.5	350 18 33.4	1 14 33.6	.69
29	23 54 41.21	1 45 41.5	.7544688	21 21.4	350 24 1.2	1 14 36.0	.69
30	23 55 27.64	1 40 49.3	.7536877	21 18.2	350 29 29.0	1 14 38.4	.69
31	23 56 13.80	S. 1 35 58.8	0.7528934	21 15.0	350 34 56.8	S. 1 14 40.8	0.69

JUPITER.

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APRIL, 1856.

At Transit over the Meridian of Greenwich.

	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sein. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	h m s	s	s	° ' "	"	"	"
	23 32 23 ^{.57}	+ 2 ^{.16}	1 ^{.13}	S. 4 6 34 ^{.9}	+ 13 ^{.6}	15 ^{.7}	1 ^{.5}
	23 33 15 ^{.23}	2 ^{.15}	1 ^{.13}	4 1 8 ^{.3}	13 ^{.6}	15 ^{.7}	1 ^{.5}
	23 34 6 ^{.75}	2 ^{.14}	1 ^{.13}	3 55 42 ^{.5}	13 ^{.6}	15 ^{.8}	1 ^{.5}
	23 34 58 ^{.11}	2 ^{.14}	1 ^{.13}	3 50 17 ^{.7}	13 ^{.5}	15 ^{.8}	1 ^{.5}
	23 35 49 ^{.33}	2 ^{.13}	1 ^{.13}	3 44 53 ^{.7}	13 ^{.5}	15 ^{.8}	1 ^{.5}
	23 36 40 ^{.39}	2 ^{.12}	1 ^{.13}	3 39 30 ^{.6}	13 ^{.4}	15 ^{.8}	1 ^{.5}
	23 37 31 ^{.29}	2 ^{.12}	1 ^{.13}	3 34 8 ^{.6}	13 ^{.4}	15 ^{.8}	1 ^{.5}
	23 38 22 ^{.03}	2 ^{.11}	1 ^{.13}	3 28 47 ^{.6}	13 ^{.4}	15 ^{.8}	1 ^{.5}
	23 39 12 ^{.60}	2 ^{.10}	1 ^{.13}	3 23 27 ^{.6}	13 ^{.3}	15 ^{.9}	1 ^{.5}
	23 40 3 ^{.00}	2 ^{.10}	1 ^{.14}	3 18 8 ^{.7}	13 ^{.3}	15 ^{.9}	1 ^{.5}
	23 40 53 ^{.22}	2 ^{.09}	1 ^{.14}	3 12 51 ^{.0}	13 ^{.2}	15 ^{.9}	1 ^{.5}
	23 41 43 ^{.27}	2 ^{.08}	1 ^{.14}	3 7 34 ^{.4}	13 ^{.2}	15 ^{.9}	1 ^{.5}
	23 42 33 ^{.13}	2 ^{.07}	1 ^{.15}	3 2 19 ^{.0}	13 ^{.1}	15 ^{.9}	1 ^{.5}
	23 43 22 ^{.80}	2 ^{.07}	1 ^{.15}	2 57 4 ^{.7}	13 ^{.1}	15 ^{.9}	1 ^{.5}
	23 44 12 ^{.28}	2 ^{.06}	1 ^{.15}	2 51 51 ^{.8}	13 ^{.0}	15 ^{.9}	1 ^{.5}
	23 45 1 ^{.57}	2 ^{.05}	1 ^{.15}	2 46 40 ^{.1}	13 ^{.0}	15 ^{.9}	1 ^{.5}
	23 45 50 ^{.66}	2 ^{.04}	1 ^{.16}	2 41 29 ^{.7}	12 ^{.9}	16 ^{.0}	1 ^{.5}
	23 46 39 ^{.54}	2 ^{.03}	1 ^{.16}	2 36 20 ^{.6}	12 ^{.8}	16 ^{.0}	1 ^{.5}
	23 47 28 ^{.22}	2 ^{.02}	1 ^{.16}	2 31 13 ^{.0}	12 ^{.8}	16 ^{.0}	1 ^{.5}
	23 48 16 ^{.69}	2 ^{.01}	1 ^{.16}	2 26 6 ^{.8}	12 ^{.7}	16 ^{.0}	1 ^{.5}
	23 49 4 ^{.93}	2 ^{.01}	1 ^{.16}	2 21 2 ^{.1}	12 ^{.7}	16 ^{.1}	1 ^{.5}
	23 49 52 ^{.94}	2 ^{.00}	1 ^{.16}	2 15 59 ^{.0}	12 ^{.6}	16 ^{.1}	1 ^{.5}
	23 50 40 ^{.74}	1 ^{.99}	1 ^{.16}	2 10 57 ^{.3}	12 ^{.5}	16 ^{.1}	1 ^{.5}
	23 51 28 ^{.30}	1 ^{.98}	1 ^{.16}	2 5 57 ^{.3}	12 ^{.5}	16 ^{.1}	1 ^{.5}
	23 52 15 ^{.63}	1 ^{.97}	1 ^{.17}	2 0 58 ^{.8}	12 ^{.4}	16 ^{.2}	1 ^{.5}
	23 53 2 ^{.72}	1 ^{.96}	1 ^{.17}	1 56 1 ^{.9}	12 ^{.3}	16 ^{.2}	1 ^{.5}
	23 53 49 ^{.58}	1 ^{.95}	1 ^{.17}	1 51 6 ^{.7}	12 ^{.3}	16 ^{.2}	1 ^{.5}
	23 54 36 ^{.18}	1 ^{.94}	1 ^{.17}	1 46 13 ^{.2}	12 ^{.2}	16 ^{.3}	1 ^{.5}
	23 55 22 ^{.54}	1 ^{.93}	1 ^{.17}	1 41 21 ^{.4}	12 ^{.1}	16 ^{.3}	1 ^{.5}
	23 56 8 ^{.63}	1 ^{.92}	1 ^{.17}	1 36 31 ^{.4}	12 ^{.0}	16 ^{.3}	1 ^{.5}
	23 56 54 ^{.46}	+ 1 ^{.90}	1 ^{.18}	S. 1 31 43 ^{.2}	+ 12 ^{.0}		1 ^{.5}

JUPITER.

MAY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	R
	Noon.	Noon.	Noon.		Noon.	Noon.	
	h m s	° ' "	°	h m	° ' "	° ' "	
1	23 56 13.80	S. 1 35 58.8	0.7528934	21 15.0	350 34 56.8	S. 1 14 40.8	0
2	23 56 59.70	1 31 10.2	.7520859	21 11.9	350 40 24.6	1 14 43.1	
3	23 57 45.33	1 26 23.5	.7512653	21 8.7	350 45 52.5	1 14 45.5	
4	23 58 30.68	1 21 38.7	.7504316	21 5.5	350 51 20.4	1 14 47.8	
5	23 59 15.74	1 16 55.9	.7495849	21 2.3	350 56 48.2	1 14 50.1	
6	0 0 0.52	1 12 15.1	.7487253	20 59.1	351 2 16.1	1 14 52.4	
7	0 0 45.00	1 7 36.4	.7478530	20 55.9	351 7 44.1	1 14 54.7	
8	0 1 29.18	1 2 59.7	.7469679	20 52.7	351 13 12.0	1 14 57.0	
9	0 2 13.06	0 58 25.2	.7460703	20 49.5	351 18 40.0	1 14 59.3	
10	0 2 56.63	0 53 52.8	.7451602	20 46.3	351 24 7.9	1 15 1.5	
11	0 3 39.88	0 49 22.7	.7442378	20 43.1	351 29 35.9	1 15 3.8	
12	0 4 22.81	0 44 54.7	.7433031	20 39.8	351 35 4.0	1 15 6.0	
13	0 5 5.42	0 40 29.1	.7423562	20 36.6	351 40 32.0	1 15 8.3	
14	0 5 47.70	0 36 5.7	.7413973	20 33.4	351 46 0.0	1 15 10.5	
15	0 6 29.64	0 31 44.7	.7404263	20 30.1	351 51 28.1	1 15 12.7	
16	0 7 11.25	0 27 26.1	.7394435	20 26.9	351 56 56.2	1 15 14.9	
17	0 7 52.52	0 23 9.8	.7384489	20 23.6	352 2 24.3	1 15 17.1	
18	0 8 33.44	0 18 56.0	.7374426	20 20.4	352 7 52.4	1 15 19.3	
19	0 9 14.00	0 14 44.7	.7364246	20 17.1	352 13 20.6	1 15 21.4	
20	0 9 54.21	0 10 35.8	.7353951	20 13.8	352 18 48.7	1 15 23.6	
21	0 10 34.06	0 6 29.5	.7343541	20 10.6	352 24 16.9	1 15 25.7	
22	0 11 13.54	S. 0 2 25.7	.7333018	20 7.3	352 29 45.1	1 15 27.8	
23	0 11 52.65	N. 0 1 35.4	.7322381	20 4.0	352 35 13.3	1 15 29.9	
24	0 12 31.38	0 5 33.9	.7311632	20 0.7	352 40 41.5	1 15 32.0	
25	0 13 9.72	0 9 29.8	.7300771	19 57.4	352 46 9.8	1 15 34.1	
26	0 13 47.67	0 13 22.9	.7289799	19 54.1	352 51 38.1	1 15 36.2	
27	0 14 25.22	0 17 13.2	.7278718	19 50.8	352 57 6.3	1 15 38.3	
28	0 15 2.37	0 21 0.7	.7267527	19 47.5	353 2 34.6	1 15 40.3	
29	0 15 39.11	0 24 45.4	.7256228	19 44.1	353 8 3.0	1 15 42.4	
30	0 16 15.43	0 28 27.2	.7244823	19 40.8	353 13 31.3	1 15 44.4	
31	0 16 51.33	0 32 6.0	.7233314	19 37.5	353 18 59.6	1 15 46.4	
32	0 17 26.80	N. 0 35 41.8	0.7221701	19 34.1	353 24 28.0	S. 1 15 48.5	0

JUPITER.

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MAY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	+	s	° ' "	"	"	"
23 56 54.46	+ 1.90	1.18	S. 1 31 43.2	+ 12.0	16.4	1.5
23 57 40.02	1.89	1.18	1 26 56.9	11.9	16.4	1.5
23 58 25.30	1.88	1.18	1 22 12.5	11.8	16.4	1.5
23 59 10.30	1.87	1.18	1 17 30.1	11.7	16.5	1.5
23 59 55.01	1.86	1.18	1 12 49.7	11.6	16.5	1.5
0 0 39.43	1.84	1.18	1 8 11.3	11.6	16.5	1.5
0 1 23.55	1.83	1.19	1 3 35.0	11.5	16.6	1.5
0 2 7.37	1.82	1.19	0 59 0.8	11.4	16.6	1.5
0 2 50.88	1.81	1.19	0 54 28.8	11.3	16.6	1.5
0 3 34.08	1.79	1.20	0 49 58.9	11.2	16.7	1.5
0 4 16.96	1.78	1.20	0 45 31.3	11.1	16.7	1.5
0 4 59.51	1.77	1.20	0 41 5.9	11.0	16.7	1.6
0 5 41.74	1.75	1.21	0 36 42.8	10.9	16.8	1.6
0 6 23.64	1.74	1.21	0 32 22.0	10.8	16.8	1.6
0 7 5.21	1.72	1.21	0 28 3.6	10.7	16.9	1.6
0 7 46.43	1.71	1.21	0 23 47.6	10.6	16.9	1.6
0 8 27.31	1.70	1.21	0 19 34.0	10.5	16.9	1.6
0 9 7.84	1.68	1.22	0 15 22.8	10.4	17.0	1.6
0 9 48.01	1.67	1.22	0 11 14.2	10.3	17.0	1.6
0 10 27.83	1.65	1.22	0 7 8.0	10.2	17.1	1.6
0 11 7.28	1.64	1.22	S. 0 3 4.4	10.1	17.1	1.6
0 11 46.35	1.62	1.22	N. 0 0 56.6	10.0	17.2	1.6
0 12 23.05	1.60	1.23	0 4 55.0	9.9	17.2	1.6
0 13 3.37	1.59	1.24	0 8 50.8	9.8	17.2	1.6
0 13 41.30	1.57	1.24	0 12 43.8	9.7	17.2	1.6
0 14 18.84	1.56	1.25	0 16 34.1	9.5	17.3	1.6
0 14 55.97	1.54	1.25	0 20 21.6	9.4	17.3	1.6
0 15 32.70	1.52	1.25	0 24 6.2	9.3	17.3	1.6
0 16 9.01	1.50	1.25	0 27 48.0	9.2	17.4	1.6
0 16 44.90	1.49	1.25	0 31 26.8	9.1	17.4	1.6
0 17 20.36	1.47	1.26	0 35 2.6	9.0	17.4	1.6
0 17 55.39	+ 1.45	1.26	N. 0 38 35.5	8.9	17.4	1.6

JUPITER.

JUNE, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	
	Noon.	Noon.	Noon.		Noon.	Noon.	
1	h m s 0 17 26.80	N. 0 35 41.8	0.7221701	h m 19 34.1	0 1 2 353 24 28.0	S. 1 15 48.5	0.6
2	0 18 1.83	0 39 14.5	.7209987	19 30.7	353 29 56.4	1 15 50.5	.6
3	0 18 36.42	0 42 44.1	.7198173	19 27.4	353 35 24.7	1 15 52.4	.6
4	0 19 10.55	0 46 10.6	.7186261	19 24.0	353 40 53.2	1 15 54.4	.6
5	0 19 44.24	0 49 33.9	.7174252	19 20.6	353 46 21.6	1 15 56.4	.6
6	0 20 17.45	0 52 54.1	.7162149	19 17.2	353 51 50.0	1 15 58.3	.6
7	0 20 50.20	0 56 11.0	.7149953	19 13.8	353 57 18.5	1 16 0.3	.6
8	0 21 22.48	0 59 24.6	.7137665	19 10.4	354 2 46.9	1 16 2.2	.6
9	0 21 54.27	1 2 34.9	.7125288	19 7.0	354 8 15.4	1 16 4.1	.6
10	0 22 25.58	1 5 42.0	.7112824	19 3.6	354 13 43.9	1 16 6.0	.6
11	0 22 56.40	1 8 45.6	.7100275	19 0.2	354 19 12.4	1 16 7.9	.6
12	0 23 26.72	1 11 45.9	.7087642	18 56.7	354 24 41.0	1 16 9.8	.6
13	0 23 56.53	1 14 42.7	.7074927	18 53.3	354 30 9.5	1 16 11.7	.6
14	0 24 25.84	1 17 36.1	.7062133	18 49.8	354 35 38.1	1 16 13.6	.6
15	0 24 54.64	1 20 26.0	.7049262	18 46.4	354 41 6.7	1 16 15.4	.6
16	0 25 22.92	1 23 12.3	.7036315	18 42.9	354 46 35.3	1 16 17.3	.6
17	0 25 50.68	1 25 55.1	.7023294	18 39.4	354 52 3.9	1 16 19.1	.6
18	0 26 17.90	1 28 34.3	.7010200	18 36.0	354 57 32.5	1 16 20.9	.6
19	0 26 44.59	1 31 9.9	.6997036	18 32.5	355 3 1.1	1 16 22.7	.6
20	0 27 10.74	1 33 41.8	.6983803	18 29.0	355 8 29.8	1 16 24.5	.6
21	0 27 36.34	1 36 10.0	.6970503	18 25.4	355 13 58.5	1 16 26.3	.6
22	0 28 1.38	1 38 34.5	.6957139	18 21.9	355 19 27.2	1 16 28.1	.6
23	0 28 25.87	1 40 55.1	.6943712	18 18.4	355 24 55.9	1 16 29.8	.6
24	0 28 49.78	1 43 12.0	.6930225	18 14.8	355 30 24.6	1 16 31.6	.6
25	0 29 13.12	1 45 24.9	.6916681	18 11.3	355 35 53.3	1 16 33.3	.6
26	0 29 35.87	1 47 34.0	.6903082	18 7.7	355 41 22.0	1 16 35.0	.6
27	0 29 58.04	1 49 39.1	.6889430	18 4.1	355 46 50.8	1 16 36.8	.6
28	0 30 19.60	1 51 40.2	.6875727	18 0.6	355 52 19.5	1 16 38.5	.6
29	0 30 40.57	1 53 37.3	.6861979	17 57.0	355 57 48.3	1 16 40.1	.6
30	0 31 0.92	1 55 30.3	.6848186	17 53.4	356 3 17.1	1 16 41.8	.6
31	0 31 20.66	N. 1 57 19.2	0.6834353	17 49.8	356 8 45.9	S. 1 16 43.5	0.6

JUPITER.

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JUNE, 1856.

At Transit over the Meridian of Greenwich.

Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	h m s	''	s	° ' "	"	"	"
1	0 17 55.39	+ 1.45	1.26	N. 0 38 35.5	+ 8.8	17.5	1.6
2	0 18 29.98	1.43	1.26	0 42 5.2	8.7	17.6	1.6
3	0 19 4.13	1.41	1.26	0 45 31.8	8.5	17.6	1.6
4	0 19 37.81	1.39	1.27	0 48 55.2	8.4	17.7	1.6
5	0 20 11.05	1.38	1.27	0 52 15.5	8.3	17.8	1.6
6	0 20 43.81	1.36	1.27	0 55 32.6	8.1	17.8	1.6
7	0 21 16.11	1.34	1.28	0 58 46.4	8.0	17.9	1.7
8	0 21 47.92	1.32	1.28	1 1 56.9	7.9	17.9	1.7
9	0 22 19.25	1.30	1.29	1 5 4.2	7.7	18.0	1.7
10	0 22 50.09	1.27	1.29	1 8 8.1	7.6	18.0	1.7
11	0 23 20.44	1.25	1.30	1 11 8.6	7.5	18.1	1.7
12	0 23 50.29	1.23	1.30	1 14 5.8	7.3	18.1	1.7
13	0 24 19.64	1.21	1.30	1 16 59.5	7.2	18.2	1.7
14	0 24 48.48	1.19	1.31	1 19 49.7	7.0	18.3	1.7
15	0 25 16.81	1.17	1.31	1 22 36.4	6.9	18.3	1.7
16	0 25 44.61	1.15	1.32	1 25 19.6	6.7	18.4	1.7
17	0 26 11.89	1.13	1.32	1 27 59.2	6.6	18.4	1.7
18	0 26 38.63	1.10	1.33	1 30 35.2	6.4	18.5	1.7
19	0 27 4.84	1.08	1.33	1 33 7.6	6.3	18.5	1.7
20	0 27 30.50	1.06	1.33	1 35 36.3	6.1	18.5	1.7
21	0 27 55.62	1.03	1.33	1 38 1.2	6.0	18.6	1.7
22	0 28 20.17	1.01	1.33	1 40 22.5	5.8	18.6	1.7
23	0 28 44.16	0.98	1.34	1 42 39.9	5.6	18.7	1.7
24	0 29 7.58	0.96	1.34	1 44 53.4	5.5	18.8	1.7
25	0 29 30.41	0.94	1.35	1 47 3.1	5.3	18.8	1.7
26	0 29 52.67	0.92	1.36	1 49 8.9	5.2	18.9	1.8
27	0 30 14.33	0.89	1.37	1 51 10.7	5.0	19.0	1.8
28	0 30 35.39	0.87	1.37	1 53 8.5	4.8	19.0	1.8
29	0 30 55.85	0.84	1.38	1 55 2.2	4.7	19.1	1.8
30	0 31 15.70	0.81	1.38	1 56 51.9	4.5	19.1	1.8
31	0 31 34.92	+ 0.79	1.38	N. 1 58 37.5	+ 4.3	19.2	

JULY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	L. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N
	h m s	° ' "		h m	° ' "	° ' "	
1	0 31 20.66	N. 1 57 19.2	0.6834353	17 49.8	356 8 45.9	S. 1 16 43.5	0.69
2	0 31 39.78	1 59 4.0	0.6820483	17 46.1	356 14 14.7	1 16 45.2	0.69
3	0 31 58.27	2 0 44.6	0.6806578	17 42.5	356 19 43.5	1 16 46.8	0.69
4	0 32 16.12	2 2 21.0	0.6792643	17 38.9	356 25 12.4	1 16 48.4	0.69
5	0 32 33.33	2 3 53.2	0.6778681	17 35.2	356 30 41.2	1 16 50.1	0.69
6	0 32 49.90	2 5 21.1	0.6764695	17 31.5	356 36 10.1	1 16 51.7	0.69
7	0 33 5.82	2 6 44.8	0.6750690	17 27.9	356 41 39.0	1 16 53.3	0.69
8	0 33 21.08	2 8 4.1	0.6736668	17 24.2	356 47 7.9	1 16 54.9	0.69
9	0 33 35.68	2 9 19.1	0.6722634	17 20.5	356 52 36.8	1 16 56.4	0.69
10	0 33 49.62	2 10 29.8	0.6708592	17 16.8	356 58 5.7	1 16 58.0	0.69
11	0 34 2.89	2 11 36.1	0.6694543	17 13.1	357 3 34.6	1 16 59.5	0.69
12	0 34 15.49	2 12 38.0	0.6680493	17 9.3	357 9 3.5	1 17 1.1	0.69
13	0 34 27.42	2 13 35.5	0.6666444	17 5.6	357 14 32.5	1 17 2.6	0.69
14	0 34 38.66	2 14 28.6	0.6652401	17 1.8	357 20 1.5	1 17 4.1	0.69
15	0 34 49.23	2 15 17.3	0.6638367	16 58.1	357 25 30.4	1 17 5.6	0.69
16	0 34 59.10	2 16 1.5	0.6624345	16 54.3	357 30 59.4	1 17 7.1	0.69
17	0 35 8.29	2 16 41.2	0.6610339	16 50.5	357 36 28.4	1 17 8.6	0.69
18	0 35 16.78	2 17 16.5	0.6596354	16 46.7	357 41 57.4	1 17 10.1	0.69
19	0 35 24.57	2 17 47.2	0.6582393	16 42.9	357 47 26.5	1 17 11.6	0.69
20	0 35 31.66	2 18 13.4	0.6568460	16 39.1	357 52 55.5	1 17 13.0	0.69
21	0 35 38.04	2 18 35.1	0.6554559	16 35.2	357 58 24.5	1 17 14.4	0.69
22	0 35 43.71	2 18 52.2	0.6540694	16 31.4	358 3 53.6	1 17 15.9	0.69
23	0 35 48.66	2 19 4.8	0.6526871	16 27.5	358 9 22.7	1 17 17.3	0.69
24	0 35 52.90	2 19 12.7	0.6513094	16 23.7	358 14 51.7	1 17 18.7	0.69
25	0 35 56.41	2 19 16.0	0.6499367	16 19.8	358 20 20.8	1 17 20.1	0.69
26	0 35 59.20	2 19 14.7	0.6485696	16 15.9	358 25 49.9	1 17 21.4	0.69
27	0 36 1.26	2 19 8.7	0.6472085	16 12.0	358 31 19.0	1 17 22.8	0.69
28	0 36 2.59	2 18 58.1	0.6458539	16 8.1	358 36 48.1	1 17 24.2	0.69
29	0 36 3.19	2 18 42.8	0.6445065	16 4.1	358 42 17.2	1 17 25.5	0.69
30	0 36 3.05	2 18 22.9	0.6431666	16 0.2	358 47 46.4	1 17 26.8	0.69
31	0 36 2.18	2 17 58.3	0.6418350	15 56.2	358 53 15.5	1 17 28.1	0.69
32	0 36 0.58	N. 2 17 29.0	0.6405120	15 52.3	358 58 44.7	S. 1 17 29.4	0.69

JUPITER.

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JULY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
0 31 34.92	+ 0.79	1.38	N. 1 58 37.5	+ 4.3	19.2	1.8
0 31 53.53	0.76	1.38	2 0 18.9	4.1	19.3	1.8
0 32 11.50	0.74	1.38	2 1 56.1	4.0	19.3	1.8
0 32 28.84	0.71	1.39	2 3 29.2	3.8	19.4	1.8
0 32 45.53	0.68	1.40	2 4 58.0	3.6	19.5	1.8
0 33 1.59	0.66	1.40	2 6 22.6	3.4	19.5	1.8
0 33 16.99	0.63	1.41	2 7 42.9	3.3	19.6	1.8
0 33 31.73	0.60	1.41	2 8 58.9	3.1	19.7	1.8
0 33 45.82	0.57	1.42	2 10 10.6	2.9	19.8	1.8
0 33 59.24	0.55	1.42	2 11 17.9	2.7	19.8	1.8
0 34 12.00	0.52	1.42	2 12 20.9	2.5	19.8	1.8
0 34 24.08	0.49	1.43	2 13 19.5	2.4	19.9	1.8
0 34 35.49	0.46	1.43	2 14 13.8	2.2	19.9	1.8
0 34 46.23	0.43	1.44	2 15 3.6	2.0	20.0	1.9
0 34 56.28	0.40	1.44	2 15 49.0	1.8	20.1	1.9
0 35 5.65	0.38	1.45	2 16 29.9	1.6	20.1	1.9
0 35 14.32	0.35	1.46	2 17 6.4	1.4	20.2	1.9
0 35 22.30	0.32	1.46	2 17 38.4	1.2	20.3	1.9
0 35 29.58	0.29	1.46	2 18 5.9	1.1	20.4	1.9
0 35 36.16	0.26	1.46	2 18 28.9	0.9	20.4	1.9
0 35 42.04	0.23	1.47	2 18 47.4	0.7	20.5	1.9
0 35 47.20	0.20	1.48	2 19 1.3	0.5	20.6	1.9
0 35 51.65	0.17	1.48	2 19 10.7	0.3	20.6	1.9
0 35 55.38	0.14	1.49	2 19 15.5	+ 0.1	20.7	1.9
0 35 58.39	0.11	1.50	2 19 15.6	- 0.1		1.9
0 36 0.67	0.08	1.50	2 19 11.2	0.3		
0 36 2.24	0.05	1.50	2 19 2.0	0.7		
0 36 3.07	+ 0.02	1.50	2 18 48.3			
0 36 3.18	- 0.01	1.51	2 18 30.0			
0 36 2.55	0.04	1.51	2 18 7.0			
0 36 1.20	0.07	1.52	2 17 39.3			
0 35 59.12	- 0.10	1.52	N. 2 17 7.1			

AUGUST, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	h m s 0 36 0.58	N. 2 17 29.0	0.6405120	h m 15 52.3	0 1 2 358 58 44.7	S. 1 17 29.4	0.695
2	0 35 58.24	2 16 55.1	.6391983	15 48.3	359 4 13.8	1 17 30.7	.695
3	0 35 55.17	2 16 16.6	.6378944	15 44.3	359 9 43.0	1 17 32.0	.695
4	0 35 51.37	2 15 33.4	.6366009	15 40.3	359 15 12.2	1 17 33.2	.695
5	0 35 46.84	2 14 45.7	.6353183	15 36.3	359 20 41.4	1 17 34.5	.695
6	0 35 41.58	2 13 53.4	.6340472	15 32.3	359 26 10.6	1 17 35.8	.695
7	0 35 35.60	2 12 56.6	.6327882	15 28.2	359 31 39.8	1 17 37.0	.695
8	0 35 28.90	2 11 55.3	.6315419	15 24.2	359 37 9.0	1 17 38.2	.695
9	0 35 21.47	2 10 49.5	.6303087	15 20.1	359 42 38.2	1 17 39.4	.695
10	0 35 13.34	2 9 39.3	.6290892	15 16.0	359 48 7.4	1 17 40.6	.695
11	0 35 4.49	2 8 24.7	.6278839	15 12.0	359 53 36.7	1 17 41.8	.695
12	0 34 54.94	2 7 5.7	.6266934	15 7.9	359 59 5.9	1 17 43.0	.695
13	0 34 44.69	2 5 42.4	.6255182	15 3.8	0 4 35.2	1 17 44.2	.695
14	0 34 33.75	2 4 14.8	.6243588	14 59.6	0 10 4.5	1 17 45.3	.695
15	0 34 22.12	2 2 43.0	.6232157	14 55.5	0 15 33.8	1 17 46.5	.695
16	0 34 9.80	2 1 7.0	.6220895	14 51.4	0 21 3.1	1 17 47.6	.695
17	0 33 56.80	1 59 26.8	.6209807	14 47.2	0 26 32.4	1 17 48.7	.695
18	0 33 43.13	1 57 42.5	.6198900	14 43.0	0 32 1.7	1 17 49.8	.695
19	0 33 28.79	1 55 54.1	.6188178	14 38.9	0 37 31.0	1 17 50.9	.695
20	0 33 13.79	1 54 1.7	.6177646	14 34.7	0 43 0.3	1 17 52.0	.695
21	0 32 58.13	1 52 5.3	.6167312	14 30.5	0 48 29.6	1 17 53.0	.695
22	0 32 41.83	1 50 4.9	.6157180	14 26.3	0 53 59.0	1 17 54.1	.695
23	0 32 24.89	1 48 0.8	.6147256	14 22.1	0 59 28.3	1 17 55.1	.695
24	0 32 7.33	1 45 52.8	.6137548	14 17.8	1 4 57.7	1 17 56.2	.695
25	0 31 49.14	1 43 41.1	.6128059	14 13.6	1 10 27.0	1 17 57.2	.695
26	0 31 30.34	1 41 25.7	.6118797	14 9.3	1 15 56.4	1 17 58.2	.695
27	0 31 10.95	1 39 6.8	.6109766	14 5.1	1 21 25.8	1 17 59.2	.695
28	0 30 50.97	1 36 44.4	.6100974	14 0.8	1 26 55.1	1 18 0.2	.695
29	0 30 30.41	1 34 18.6	.6092425	13 56.5	1 32 24.5	1 18 1.2	.695
30	0 30 9.30	1 31 49.5	.6084125	13 52.2	1 37 53.9	1 18 2.1	.695
31	0 29 47.65	1 29 17.2	.6076079	13 47.9	1 43 23.3	1 18 3.1	.695
32	0 29 25.47	N. 1 26 41.8	0.6068293	13 43.6	1 48 52.7	S. 1 18 4.0	.695

JUPITER.

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AUGUST, 1856.

At Transit over the Meridian of Greenwich.

Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	h m s	s	s	° ' "	"	"	"
1	0 35 59.12	- 0.10	1.52	N. 2 17 7.1	- 1.4	21.2	2.0
2	0 35 56.30	0.13	1.53	2 16 30.2	1.6	21.3	2.0
3	0 35 52.76	0.16	1.54	2 15 48.8	1.8	21.4	2.0
4	0 35 48.50	0.19	1.54	2 15 2.8	2.0	21.4	2.0
5	0 35 43.50	0.22	1.54	2 14 12.2	2.2	21.5	2.0
6	0 35 37.79	0.25	1.54	2 13 17.2	2.4	21.5	2.0
7	0 35 31.36	0.28	1.55	2 12 17.6	2.6	21.6	2.0
8	0 35 24.21	0.31	1.55	2 11 13.6	2.8	21.6	2.0
9	0 35 16.36	0.34	1.56	2 10 5.1	2.9	21.7	2.0
10	0 35 7.79	0.37	1.57	2 8 52.3	3.1	21.8	2.0
11	0 34 58.52	0.40	1.57	2 7 35.2	3.3	21.8	2.0
12	0 34 48.56	0.43	1.57	2 6 13.7	3.5	21.9	2.0
13	0 34 37.90	0.46	1.58	2 4 48.0	3.7	22.0	2.0
14	0 34 26.56	0.49	1.58	2 3 18.0	3.8	22.0	2.0
15	0 34 14.54	0.52	1.58	2 1 43.8	4.0	22.1	2.0
16	0 34 1.83	0.54	1.59	2 0 5.5	4.2	22.2	2.1
17	0 33 48.46	0.57	1.59	1 58 23.0	4.4	22.2	2.1
18	0 33 34.42	0.60	1.60	1 56 36.5	4.6	22.3	2.1
19	0 33 19.72	0.63	1.60	1 54 46.0	4.7	22.3	2.1
20	0 33 4.36	0.65	1.61	1 52 51.4	4.9	22.3	2.1
21	0 32 48.36	0.68	1.61	1 50 53.0	5.0	22.4	2.1
22	0 32 31.72	0.71	1.61	1 48 50.7	5.2	22.4	2.1
23	0 32 14.45	0.73	1.62	1 46 44.6	5.3	22.5	2.1
24	0 31 56.57	0.76	1.62	1 44 34.8	5.5	22.5	2.1
25	0 31 38.07	0.78	1.62	1 42 21.3	5.6	22.6	2.1
26	0 31 18.97	0.81	1.63	1 40 4.2	5.8	22.7	
27	0 30 59.29	0.83	1.63	1 37 43.7	5.9	22.7	
28	0 30 39.04	0.85	1.64	1 35 19.7	6.1	22	
29	0 30 18.22	0.88	1.64	1 32 52.4	6.2	21	
30	0 29 56.85	0.90	1.64	1 30 21.9	6.3	21	
31	0 29 34.96	0.92	1.65	1 27 48.2	6.5	21	
32	0 29 12.55	- 0.94	1.65	N. 1 25 11.6	- 6.6		

JUPITER.

SEPTEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Lo Rad
	Noon.	Noon.	Noon.		Noon.	Noon.	N
1	h m s 0 29 25.47	N. 1 26 41.8	.6068293	h m 13 43.6	0 1 2 1 48 52.7	S. 1 18 4.0	0.69
2	0 29 2.78	1 24 3.4	.6060772	13 39.3	1 54 22.2	1 18 4.9	.69
3	0 28 39.58	1 21 22.2	.6053521	13 35.0	1 59 51.6	1 18 5.8	.69
4	0 28 15.91	1 18 38.2	.6046543	13 30.6	2 5 21.0	1 18 6.7	.69
5	0 27 51.78	1 15 51.6	.6039845	13 26.3	2 10 50.5	1 18 7.6	.69
6	0 27 27.19	1 13 2.4	.6033429	13 22.0	2 16 19.9	1 18 8.5	.69
7	0 27 2.18	1 10 10.9	.6027301	13 17.6	2 21 49.4	1 18 9.4	.69
8	0 26 36.75	1 7 17.0	.6021464	13 13.2	2 27 18.8	1 18 10.2	.69
9	0 26 10.93	1 4 21.1	.6015921	13 8.9	2 32 48.3	1 18 11.1	.69
10	0 25 44.73	1 1 23.1	.6010677	13 4.5	2 38 17.8	1 18 11.9	.69
11	0 25 18.17	0 58 23.2	.6005734	13 0.1	2 43 47.3	1 18 12.7	.69
12	0 24 51.28	0 55 21.5	.6001095	12 55.8	2 49 16.8	1 18 13.5	.69
13	0 24 24.07	0 52 18.2	.5996763	12 51.4	2 54 46.3	1 18 14.3	.69
14	0 23 56.55	0 49 13.3	.5992742	12 47.0	3 0 15.8	1 18 15.1	.69
15	0 23 28.76	0 46 7.1	.5989034	12 42.6	3 5 45.3	1 18 15.9	.69
16	0 23 0.70	0 42 59.5	.5985643	12 38.2	3 11 14.8	1 18 16.6	.69
17	0 22 32.40	0 39 50.9	.5982570	12 33.8	3 16 44.4	1 18 17.4	.69
18	0 22 3.88	0 36 41.2	.5979818	12 29.4	3 22 13.9	1 18 18.1	.69
19	0 21 35.16	0 33 30.6	.5977389	12 25.0	3 27 43.5	1 18 18.8	.69
20	0 21 6.25	0 30 19.3	.5975286	12 20.6	3 33 13.0	1 18 19.5	.69
21	0 20 37.19	0 27 7.4	.5973511	12 16.2	3 38 42.6	1 18 20.2	.69
22	0 20 7.98	0 23 55.1	.5972065	12 11.8	3 44 12.1	1 18 20.9	.69
23	0 19 38.66	0 20 42.5	.5970951	12 7.3	3 49 41.7	1 18 21.6	.69
24	0 19 9.25	0 17 29.7	.5970170	12 2.9	3 55 11.3	1 18 22.3	.69
25	0 18 39.76	0 14 16.9	.5969723	11 58.5	4 0 40.9	1 18 22.9	.69
26	0 18 10.23	0 11 4.3	.5969611	11 54.1	4 6 10.5	1 18 23.5	.69
27	0 17 40.67	0 7 52.0	.5969835	11 49.7	4 11 40.1	1 18 24.2	.69
28	0 17 11.10	0 4 40.1	.5970395	11 45.2	4 17 9.7	1 18 24.8	.69
29	0 16 41.56	N. 0 1 28.9	.5971290	11 40.8	4 22 39.3	1 18 25.4	.69
30	0 16 12.07	S. 0 1 41.6	.5972522	11 36.4	4 28 9.0	1 18 26.0	.69
31	0 15 42.65	S. 0 4 51.2	.5974090	11 32.0	4 33 38.6	S. 1 18 26.6	.69

JUPITER.

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SEPTEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	s	s	° ′ ″	″	″	″
○ 29 12.55	- 0.94	1.65	N. 1 25 11.6	- 6.6	22.9	2.1
○ 28 40.64	0.97	1.65	1 22 32.0	6.7	23.0	2.1
○ 28 26.24	0.99	1.65	1 19 49.7	6.8	23.0	2.1
○ 28 2.38	1.00	1.65	1 17 4.7	6.9	23.0	2.1
○ 27 38.06	1.02	1.66	1 14 17.1	7.0	23.1	2.1
○ 27 13.31	1.04	1.66	1 11 27.1	7.1	23.1	2.1
○ 26 48.14	1.06	1.66	1 8 34.9	7.2	23.1	2.1
○ 26 22.57	1.07	1.66	1 5 40.4	7.3	23.2	2.1
○ 25 56.62	1.09	1.66	1 2 43.8	7.4	23.2	2.1
○ 25 30.30	1.10	1.66	○ 59 45.3	7.5	23.2	2.2
○ 25 3.64	1.12	1.67	○ 56 45.0	7.5	23.3	2.2
○ 24 36.66	1.13	1.67	○ 53 43.0	7.6	23.3	2.2
○ 24 9.36	1.14	1.67	○ 50 39.4	7.7	23.3	2.2
○ 23 41.78	1.15	1.67	○ 47 34.3	7.7	23.3	2.2
○ 23 13.93	1.17	1.67	○ 44 27.9	7.8	23.3	2.2
○ 22 45.83	1.18	1.68	○ 41 20.4	7.8	23.4	2.2
○ 22 17.50	1.19	1.68	○ 38 11.7	7.9	23.4	2.2
○ 21 48.95	1.19	1.68	○ 35 2.1	7.9	23.4	2.2
○ 21 20.22	1.20	1.68	○ 31 51.8	7.9	23.4	2.2
○ 20 51.32	1.21	1.68	○ 28 40.7	8.0	23.4	2.2
○ 20 22.28	1.21	1.68	○ 25 29.2	8.0	23.4	2.2
○ 19 53.10	1.22	1.68	○ 22 17.3	8.0	23.4	2.2
○ 19 23.82	1.22	1.68	○ 19 5.1	8.0	23.4	2.2
○ 18 54.45	1.23	1.68	○ 15 52.9	8.0	23.4	2.2
○ 18 25.01	1.23	1.68	○ 12 40.8	8.0	23.4	2.2
○ 17 55.56	1.23	1.68	○ 9 28.8	8.0	23.4	2.2
○ 17 26.09	1.23	1.68	○ 6 17.3	8.0	23.4	2.2
○ 16 56.63	1.23	1.68	N. ○ 3 6.3	7.9	23.4	2.2
○ 16 27.20	1.23	1.68	S. ○ 0 4.0	7.9	23.4	2.2
○ 15 57.83	1.22	1.68	○ 3 13.4	7.9	23.4	2.2
○ 15 28.54	- 1.22	1.68	S. ○ 6 21.9	- 7.8	23.4	2.2

JUPITER.

OCTOBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad. V
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 0 15 42.65	S. o ' " 0 4 51.2	o .5974090	h m 11 32.0	o ' " 4 33 38.6	S. 1 18 26.6	o .6949
2	0 15 13.32	0 7 59.6	.5975993	11 27.5	4 39 8.2	1 18 27.1	.6949
3	0 14 44.11	0 11 6.9	.5978228	11 23.1	4 44 37.9	1 18 27.7	.6949
4	0 14 15.04	0 14 12.7	.5980794	11 18.7	4 50 7.5	1 18 28.2	.6949
5	0 13 46.13	0 17 17.0	.5983690	11 14.3	4 55 37.2	1 18 28.8	.6949
6	0 13 17.41	0 20 19.6	.5986913	11 9.9	5 1 6.8	1 18 29.3	.6949
7	0 12 48.90	0 23 20.3	.5990461	11 5.5	5 6 36.5	1 18 29.8	.6949
8	0 12 20.61	0 26 19.1	.5994331	11 1.1	5 12 6.2	1 18 30.3	.6949
9	0 11 52.58	0 29 15.8	.5998521	10 56.7	5 17 35.9	1 18 30.8	.6949
10	0 11 24.82	0 32 10.3	.6003028	10 52.3	5 23 5.5	1 18 31.3	.6949
11	0 10 57.34	0 35 2.4	.6007849	10 48.0	5 28 35.2	1 18 31.7	.6949
12	0 10 30.18	0 37 52.0	.6012981	10 43.6	5 34 4.9	1 18 32.2	.6949
13	0 10 3.35	0 40 39.0	.6018419	10 39.2	5 39 34.7	1 18 32.6	.6949
14	0 9 36.87	0 43 23.4	.6024162	10 34.8	5 45 4.4	1 18 33.0	.6949
15	0 9 10.75	0 46 4.9	.6030206	10 30.5	5 50 34.1	1 18 33.4	.6949
16	0 8 45.03	0 48 43.5	.6036546	10 26.1	5 56 3.8	1 18 33.8	.6949
17	0 8 19.70	0 51 19.0	.6043181	10 21.8	6 1 33.6	1 18 34.2	.6949
18	0 7 54.80	0 53 51.4	.6050105	10 17.4	6 7 3.3	1 18 34.6	.6949
19	0 7 30.34	0 56 20.6	.6057315	10 13.1	6 12 33.1	1 18 35.0	.6949
20	0 7 6.33	0 58 46.3	.6064806	10 8.8	6 18 2.8	1 18 35.3	.6949
21	0 6 42.81	1 1 8.6	.6072576	10 4.4	6 23 32.6	1 18 35.7	.6949
22	0 6 19.77	1 3 27.4	.6080618	10 0.1	6 29 2.3	1 18 36.0	.6949
23	0 5 57.24	1 5 42.4	.6088930	9 55.8	6 34 32.1	1 18 36.3	.6949
24	0 5 35.24	1 7 53.7	.6097505	9 51.5	6 40 1.9	1 18 36.6	.6949
25	0 5 13.78	1 10 1.1	.6106341	9 47.2	6 45 31.7	1 18 36.9	.6949
26	0 4 52.87	1 12 4.5	.6115430	9 43.0	6 51 1.4	1 18 37.2	.6949
27	0 4 32.54	1 14 3.9	.6124768	9 38.7	6 56 31.2	1 18 37.5	.6949
28	0 4 12.79	1 15 59.0	.6134349	9 34.5	7 2 1.0	1 18 37.7	.6949
29	0 3 53.65	1 17 50.0	.6144168	9 30.2	7 7 30.8	1 18 38.0	.6949
30	0 3 35.12	1 19 36.6	.6154218	9 26.0	7 13 0.6	1 18 38.2	.6949
31	0 3 17.22	1 21 18.8	.6164494	9 21.7	7 18 30.4	1 18 38.4	.6949
32	0 2 59.96	S. 1 22 56.5	o .6174990	9 17.5	7 24 0.3	S. 1 18 38.6	.6949

OCTOBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s 0 15 28.54	— 1.22	1.68	S. 0 6 21.9	— 7.8	23.4	2.2
0 14 59.36	1.21	1.68	0 9 29.2	7.8	23.4	2.2
0 14 30.30	1.21	1.68	0 12 35.2	7.7	23.4	2.2
0 14 1.39	1.20	1.67	0 15 39.7	7.7	23.3	2.2
0 13 32.66	1.19	1.67	0 18 42.7	7.6	23.3	2.2
0 13 4.12	1.18	1.67	0 21 43.9	7.5	23.3	2.2
0 12 35.80	1.18	1.67	0 24 43.3	7.4	23.3	2.2
0 12 7.71	1.17	1.67	0 27 40.6	7.3	23.3	2.2
0 11 39.88	1.16	1.66	0 30 35.7	7.2	23.2	2.2
0 11 12.33	1.14	1.66	0 33 28.5	7.2	23.2	2.2
0 10 45.08	1.13	1.66	0 36 19.0	7.1	23.2	2.2
0 10 18.15	1.12	1.66	0 39 7.0	6.9	23.2	2.1
0 9 51.53	1.10	1.66	0 41 52.4	6.8	23.1	2.1
0 9 25.31	1.09	1.66	0 44 34.9	6.7	23.1	2.1
0 8 59.44	1.07	1.66	0 47 14.7	6.6	23.1	2.1
0 8 33.97	1.05	1.65	0 49 51.5	6.5	23.0	2.1
0 8 8.90	1.04	1.65	0 52 25.2	6.3	23.0	2.1
0 7 44.26	1.02	1.65	0 54 55.7	6.2	22.9	2.1
0 7 20.06	1.00	1.65	0 57 23.0	6.1	22.9	2.1
0 6 56.33	0.98	1.65	0 59 46.9	5.9	22.9	2.1
0 6 33.07	0.96	1.64	1 2 7.3	5.8	22.8	2.1
0 6 10.31	0.94	1.64	1 4 24.1	5.6	22.8	2.1
0 5 48.07	0.92	1.63	1 6 37.2	5.5	22.7	2.1
0 5 26.36	0.89	1.63	1 8 46.5	5.3	22.7	2.1
0 5 5.18	0.87	1.63	1 10 51.9	5.1	22.6	2.1
0 4 44.57	0.85	1.63	1 12 53.3	5.0	22.6	2.1
0 4 24.53	0.82	1.62	1 14 50.6	4.8	22.5	2.1
0 4 5.08	0.80	1.62	1 16 43.8	4.6	22.5	2.1
0 3 46.24	0.77	1.62	1 18 32.7	4.5	22.4	2.1
0 3 28.01	0.75	1.62	1 20 17.3	4.3	22.4	2.1
0 3 10.41	0.72	1.61	1 21 57.5	4.1	22.3	2.1
0 2 53.46	— 0.69	1.61	S. 1 23 33.2	— 3.9	22.3	

JUPITER.

NOVEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.			Day of the Month.
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vec.	
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	
1	h m s	° ' "		h m	° ' "	° ' "		1
2	0 259.96	S. 1 22 56.5	0.6174990	9 17.5	7 24 0.3	S. 1 18 38.6	694841	1
3	0 243.35	1 24 29.7	0.6185700	9 13.3	7 29 30.1	1 18 38.8	694842	2
4	0 227.41	1 25 58.4	0.6196616	9 9.1	7 34 59.9	1 18 39.0	694843	3
5	0 212.13	1 27 22.3	0.6207735	9 5.0	7 40 29.7	1 18 39.2	694844	4
6	0 157.54	1 28 41.6	0.6219048	9 0.8	7 45 59.6	1 18 39.3	694845	5
7	0 143.64	1 29 56.1	0.6230550	8 56.6	7 51 29.4	1 18 39.5	694846	6
8	0 130.44	1 31 5.9	0.6242234	8 52.5	7 56 59.3	1 18 39.6	694847	7
9	0 117.94	1 32 10.8	0.6254094	8 48.4	8 2 29.1	1 18 39.7	694848	8
10	0 16.15	1 33 11.0	0.6266126	8 44.2	8 7 59.0	1 18 39.8	694849	9
11	0 055.07	1 34 6.2	0.6278321	8 40.1	8 13 28.8	1 18 39.9	694850	10
12	0 044.72	1 34 56.6	0.6290675	8 36.0	8 18 58.7	1 18 40.0	694851	11
13	0 035.10	1 35 42.1	0.6303180	8 31.9	8 24 28.6	1 18 40.1	694852	12
14	0 026.20	1 36 22.6	0.6315833	8 27.9	8 29 58.4	1 18 40.2	694853	13
15	0 018.05	1 36 58.3	0.6328626	8 23.8	8 35 28.3	1 18 40.2	694854	14
16	0 010.63	1 37 28.9	0.6341555	8 19.7	8 40 58.2	1 18 40.3	694855	15
17	0 03.96	1 37 54.6	0.6354613	8 15.7	8 46 28.1	1 18 40.3	694856	16
18	23 59 58.03	1 38 15.3	0.6367796	8 11.7	8 51 58.0	1 18 40.3	694857	17
19	23 59 52.85	1 38 31.0	0.6381098	8 7.7	8 57 27.9	1 18 40.3	694858	18
20	23 59 48.43	1 38 41.7	0.6394513	8 3.7	9 2 57.8	1 18 40.3	694859	19
21	23 59 44.76	1 38 47.4	0.6408036	7 59.7	9 8 27.8	1 18 40.3	694860	20
22	23 59 41.85	1 38 48.0	0.6421660	7 55.7	9 13 57.7	1 18 40.2	694861	21
23	23 59 39.70	1 38 43.6	0.6435381	7 51.7	9 19 27.6	1 18 40.2	694862	22
24	23 59 38.32	1 38 34.2	0.6449193	7 47.8	9 24 57.5	1 18 40.1	694863	23
25	23 59 37.70	1 38 19.7	0.6463090	7 43.9	9 30 27.5	1 18 40.1	694864	24
26	23 59 37.85	1 38 0.2	0.6477067	7 39.9	9 35 57.4	1 18 40.0	694865	25
27	23 59 38.76	1 37 35.6	0.6491117	7 36.0	9 41 27.3	1 18 39.9	694866	26
28	23 59 40.44	1 37 6.0	0.6505235	7 32.1	9 46 57.3	1 18 39.8	694867	27
29	23 59 42.89	1 36 31.3	0.6519416	7 28.2	9 52 27.2	1 18 39.7	694868	28
30	23 59 46.10	1 35 51.7	0.6533653	7 24.4	9 57 57.1	1 18 39.5	694869	29
31	23 59 50.08	1 35 7.1	0.6547941	7 20.5	10 3 27.1	1 18 39.4	694870	30
31	23 59 54.81	S. 1 34 17.4	0.6562275	7 16.7	10 8 57.0	S. 1 18 39.2	694871	31

JUPITER.

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NOVEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
0 2 53.46	- 0.69	1.61	S. 1 23 33.2	- 3.9	22.3	2.1
0 2 37.15	0.67	1.61	1 25 4.4	3.7	22.3	2.1
0 2 21.51	0.64	1.60	1 26 31.0	3.5	22.2	2.1
0 2 6.53	0.61	1.60	1 27 52.9	3.3	22.2	2.1
0 1 52.24	0.58	1.59	1 29 10.2	3.1	22.1	2.0
0 1 38.64	0.55	1.58	1 30 22.7	2.9	22.0	2.0
0 1 25.73	0.52	1.58	1 31 30.5	2.7	22.0	2.0
0 1 13.53	0.49	1.58	1 32 33.5	2.5	21.9	2.0
0 1 2.03	0.46	1.57	1 33 31.7	2.3	21.8	2.0
0 0 51.25	0.43	1.57	1 34 25.0	2.1	21.8	2.0
0 0 41.19	0.40	1.56	1 35 13.5	1.9	21.7	2.0
0 0 31.85	0.37	1.55	1 35 57.1	1.7	21.6	2.0
0 0 23.24	0.34	1.55	1 36 35.8	1.5	21.5	2.0
0 0 15.36	0.31	1.55	1 37 9.5	1.3	21.5	2.0
0 0 8.23	0.28	1.54	1 37 38.4	1.1	21.4	2.0
0 0 1.83	0.25	1.54	1 38 2.3	0.9	21.3	2.0
3 59 56.18	0.22	1.54	1 38 21.2	0.7	21.3	2.0
3 59 51.27	0.19	1.53	1 38 35.2	0.5	21.2	2.0
3 59 47.11	0.16	1.53	1 38 44.2	0.3	21.2	1.9
3 59 43.71	0.13	1.52	1 38 48.2	- 0.1	21.1	1.9
3 59 41.06	0.09	1.51	1 38 47.1	+ 0.1	21.0	1.9
3 59 39.17	0.06	1.51	1 38 41.1	0.4	21.0	1.9
3 59 38.03	- 0.03	1.51	1 38 30.1	0.6	21.0	1.9
3 59 37.66	0.00	1.50	1 38 14.0	0.8	20.9	1.9
3 59 38.06	+ 0.03	1.50	1 37 52.8	1.0	20.8	1.9
3 59 39.21	0.06	1.49	1 37 26.7	1.2	20.7	1.9
3 59 41.13	0.10	1.48	1 36 55.6	1.4	20.6	1.9
3 59 43.81	0.13	1.48		1.6		1.9
3 59 47.24	0.16	1.47		1.8		1.9
3 59 51.44	0.19	1.47		2.0		1.9
3 59 56.39	+ 0.22	1.47		2.2		

DECEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N
1	23 59 54.81	S. 1 34 17.4	0.6562275	7 16.7	10 8 57.0	S. 1 18 39.2	0.69
2	0 0 0.31	1 33 22.9	.6576648	7 12.8	10 14 27.0	1 18 39.1	.69
3	0 0 6.55	1 32 23.4	.6591057	7 9.0	10 19 56.9	1 18 38.9	.69
4	0 0 13.55	1 31 19.0	.6605496	7 5.2	10 25 26.9	1 18 38.7	.69
5	0 0 21.30	1 30 9.8	.6619960	7 1.4	10 30 56.8	1 18 38.5	.69
6	0 0 29.79	1 28 55.8	.6634443	6 57.6	10 36 26.8	1 18 38.3	.69
7	0 0 39.02	1 27 36.9	.6648942	6 53.8	10 41 56.8	1 18 38.0	.69
8	0 0 48.99	1 26 13.3	.6663452	6 50.1	10 47 26.7	1 18 37.8	.69
9	0 0 59.68	1 24 45.1	.6677968	6 46.3	10 52 56.7	1 18 37.5	.69
10	0 1 11.10	1 23 12.1	.6692487	6 42.6	10 58 26.7	1 18 37.3	.69
11	0 1 23.24	1 21 34.5	.6707003	6 38.8	11 3 56.6	1 18 37.0	.69
12	0 1 36.09	1 19 52.3	.6721513	6 35.1	11 9 26.6	1 18 36.7	.69
13	0 1 49.66	1 18 5.6	.6736013	6 31.4	11 14 56.6	1 18 36.4	.69
14	0 2 3.92	1 16 14.3	.6750500	6 27.7	11 20 26.6	1 18 36.1	.69
15	0 2 18.89	1 14 18.6	.6764969	6 24.1	11 25 56.5	1 18 35.7	.69
16	0 2 34.56	1 12 18.5	.6779417	6 20.3	11 31 26.5	1 18 35.4	.69
17	0 2 50.91	1 10 13.9	.6793841	6 16.7	11 36 56.5	1 18 35.1	.69
18	0 3 7.95	1 8 5.0	.6808237	6 13.1	11 42 26.5	1 18 34.7	.69
19	0 3 25.67	1 5 51.8	.6822601	6 9.4	11 47 56.5	1 18 34.4	.69
20	0 3 44.06	1 3 34.2	.6836930	6 5.8	11 53 26.5	1 18 34.0	.69
21	0 4 3.12	1 1 12.4	.6851221	6 2.2	11 58 56.4	1 18 33.6	.69
22	0 4 22.84	0 58 46.4	.6865468	5 58.6	12 4 26.4	1 18 33.2	.69
23	0 4 43.22	0 56 16.2	.6879670	5 55.0	12 9 56.4	1 18 32.8	.69
24	0 5 4.25	0 53 41.8	.6893823	5 51.4	12 15 26.4	1 18 32.3	.69
25	0 5 25.93	0 51 3.4	.6907923	5 47.8	12 20 56.4	1 18 31.9	.69
26	0 5 48.25	0 48 20.8	.6921967	5 44.3	12 26 26.3	1 18 31.4	.69
27	0 6 11.21	0 45 34.3	.6935951	5 40.7	12 31 56.3	1 18 31.0	.69
28	0 6 34.79	0 42 43.8	.6949872	5 37.2	12 37 26.3	1 18 30.5	.69
29	0 6 58.99	0 39 49.4	.6963726	5 33.7	12 42 56.2	1 18 30.0	.69
30	0 7 23.81	0 36 51.1	.6977511	5 30.1	12 48 26.2	1 18 29.5	.69
31	0 7 49.23	0 33 49.1	.6991223	5 26.6	12 53 56.2	1 18 29.0	.69
32	0 8 15.25	S. 0 30 43.2	0.7004859	5 23.1	12 59 26.2	S. 1 18 28.4	0.69

JUPITER.

347

DECEMBER, 1856.

At Transit over the Meridian of Greenwich.

Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
	h m s	s	s	° ' "	"	"	"
1	23 59 56.39	+ 0.22	1.47	S. 1 34 1.4	+ 2.2	20.4	1.9
2	0 0 2.10	0.25	1.46	1 33 5.5	2.4	20.3	1.9
3	0 0 8.56	0.28	1.46	1 32 4.7	2.6	20.2	1.9
4	0 0 15.76	0.32	1.46	1 30 59.1	2.8	20.2	1.9
5	0 0 23.70	0.35	1.45	1 29 48.7	3.0	20.1	1.9
6	0 0 32.39	0.38	1.44	1 28 33.4	3.2	20.0	1.9
7	0 0 41.81	0.41	1.44	1 27 13.4	3.4	20.0	1.9
8	0 0 51.96	0.44	1.43	1 25 48.7	3.6	19.9	1.8
9	0 1 2.83	0.47	1.43	1 24 19.3	3.8	19.8	1.8
10	0 1 14.42	0.50	1.42	1 22 45.3	4.0	19.8	1.8
11	0 1 26.73	0.53	1.42	1 21 6.7	4.2	19.8	1.8
12	0 1 39.74	0.56	1.42	1 19 23.5	4.4	19.7	1.8
13	0 1 53.46	0.59	1.41	1 17 35.8	4.6	19.6	1.8
14	0 2 7.89	0.62	1.41	1 15 43.6	4.8	19.6	1.8
15	0 2 23.00	0.64	1.40	1 13 47.0	5.0	19.5	1.8
16	0 2 38.81	0.67	1.39	1 11 46.0	5.1	19.4	1.8
17	0 2 55.30	0.70	1.39	1 9 40.6	5.3	19.3	1.8
18	0 3 12.47	0.73	1.39	1 7 30.9	5.5	19.3	1.8
19	0 3 30.32	0.76	1.38	1 5 16.9	5.7	19.2	1.8
20	0 3 48.84	0.79	1.38	1 2 58.6	5.9	19.1	1.8
21	0 4 8.01	0.81	1.38	1 0 36.1	6.0	19.1	1.8
22	0 4 27.85	0.84	1.37	0 58 9.4	6.2	19.0	1.8
23	0 4 48.35	0.87	1.36	0 55 38.5	6.4	18.9	1.8
24	0 5 9.49	0.89	1.36	0 53 3.5	6.5	18.9	1.8
25	0 5 31.27	0.92	1.35	0 50 24.5	6.7	18.8	1.7
26	0 5 53.68	0.95	1.35	0 47 41.	6.9	18.7	1.7
27	0 6 16.73	0.97	1.35	0 44 54		18.6	1.7
28	0 6 40.40	1.00	1.34	0 42		18.6	
29	0 7 4.69	1.02	1.34	0		18.5	
30	0 7 29.58	1.05	1.34	0		18.	
31	0 7 55.08	1.07	1.33	0		18	
32	0 8 21.17	+ 1.10	1.33	S.		18	

JANUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	5 40 23.47	N.22 11 14.3	.9062451	10 57.1	87 343.9	S. 1 4 8.2	.9548193
2	5 40 3.23	22 11 12.9	.9064853	10 52.8	87 5 38.8	1 4 2.9	.9548166
3	5 39 43.16	22 11 11.6	.9067419	10 48.6	87 8 13.7	1 3 57.6	.9548178
4	5 39 23.28	22 11 10.4	.9070147	10 44.3	87 10 28.6	1 3 52.3	.9548171
5	5 39 3.60	22 11 9.3	.9073037	10 40.0	87 12 43.6	1 3 47.0	.9548164
6	5 38 44.13	22 11 8.4	.9076086	10 35.8	87 14 58.5	1 3 41.7	.9548157
7	5 38 24.89	22 11 7.5	.9079294	10 31.5	87 17 13.4	1 3 36.4	.9548150
8	5 38 5.88	22 11 6.8	.9082658	10 27.3	87 19 28.3	1 3 31.1	.9548143
9	5 37 47.11	22 11 6.2	.9086176	10 23.1	87 21 43.2	1 3 25.8	.9548136
10	5 37 28.60	22 11 5.8	.9089847	10 18.8	87 23 58.1	1 3 20.5	.9548130
11	5 37 10.36	22 11 5.5	.9093669	10 14.6	87 26 13.0	1 3 15.2	.9548123
12	5 36 52.39	22 11 5.3	.9097639	10 10.4	87 28 28.0	1 3 9.9	.9548116
13	5 36 34.71	22 11 5.3	.9101755	10 6.1	87 30 42.9	1 3 4.6	.9548110
14	5 36 17.33	22 11 5.5	.9106016	10 1.9	87 32 57.8	1 2 59.3	.9548104
15	5 36 0.26	22 11 5.8	.9110419	9 57.7	87 35 12.7	1 2 54.0	.9548097
16	5 35 43.50	22 11 6.3	.9114961	9 53.5	87 37 27.6	1 2 48.6	.9548091
17	5 35 27.07	22 11 7.0	.9119640	9 49.3	87 39 42.5	1 2 43.3	.9548085
18	5 35 10.97	22 11 7.9	.9124454	9 45.1	87 41 57.4	1 2 38.0	.9548079
19	5 34 55.20	22 11 9.1	.9129401	9 40.9	87 44 12.4	1 2 32.7	.9548074
20	5 34 39.79	22 11 10.4	.9134478	9 36.7	87 46 27.3	1 2 27.4	.9548068
21	5 34 24.73	22 11 12.0	.9139682	9 32.6	87 48 42.2	1 2 22.0	.9548063
22	5 34 10.04	22 11 13.8	.9145011	9 28.4	87 50 57.1	1 2 16.7	.9548057
23	5 33 55.72	22 11 15.9	.9150463	9 24.2	87 53 12.0	1 2 11.4	.9548052
24	5 33 41.77	22 11 18.2	.9156034	9 20.1	87 55 26.9	1 2 6.0	.9548047
25	5 33 28.21	22 11 20.7	.9161724	9 15.9	87 57 41.8	1 2 0.7	.9548041
26	5 33 15.04	22 11 23.5	.9167529	9 11.8	87 59 56.7	1 1 55.4	.9548036
27	5 33 2.27	22 11 26.6	.9173446	9 7.6	88 2 11.6	1 1 50.0	.9548032
28	5 32 49.90	22 11 30.0	.9179474	9 3.5	88 4 26.5	1 1 44.7	.9548027
29	5 32 37.94	22 11 33.7	.9185610	8 59.3	88 6 41.5	1 1 39.4	.9548022
30	5 32 26.40	22 11 37.6	.9191851	8 55.2	88 8 56.4	1 1 34.0	.9548018
31	5 32 15.29	22 11 41.9	.9198194	8 51.0	88 11 11.3	1 1 28.7	.9548013
32	5 32 4.60	N.22 11 46.4	.9204637	8 47.0	88 13 26.2	S. 1 1 23.3	.9548009

SATURN.

349

JANUARY, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	h m s	s	s	° ' "	"	"	"
1	5 40 14.21	- 0.84	0.72	N.22 11 13.6	- 0.1	9.4	1.1
2	5 39 54.11	0.83	0.72	22 11 12.3	0.1	9.4	1.1
3	5 39 34.18	0.83	0.72	22 11 11.0	- 0.1	9.4	1.1
4	5 39 14.45	0.82	0.71	22 11 9.9	0.0	9.3	1.1
5	5 38 54.92	0.81	0.71	22 11 8.9	0.0	9.3	1.1
6	5 38 35.60	0.80	0.71	22 11 8.0	0.0	9.3	1.1
7	5 38 16.52	0.79	0.71	22 11 7.2	0.0	9.3	1.1
8	5 37 57.67	0.78	0.71	22 11 6.5	0.0	9.3	1.1
9	5 37 39.07	0.77	0.71	22 11 6.0	0.0	9.3	1.1
10	5 37 20.73	0.76	0.71	22 11 5.6	0.0	9.3	1.1
11	5 37 2.66	0.75	0.71	22 11 5.4	0.0	9.3	1.1
12	5 36 44.87	0.74	0.71	22 11 5.3	0.0	9.3	1.1
13	5 36 27.36	0.72	0.71	22 11 5.3	0.0	9.3	1.1
14	5 36 10.16	0.71	0.71	22 11 5.6	0.0	9.3	1.1
15	5 35 53.27	0.70	0.71	22 11 6.0	0.0	9.3	1.1
16	5 35 36.69	0.68	0.70	22 11 6.6	0.0	9.2	1.1
17	5 35 20.44	0.67	0.70	22 11 7.4	0.0	9.2	1.1
18	5 35 4.52	0.66	0.70	22 11 8.4	0.0	9.2	1.0
19	5 34 48.94	0.64	0.70	22 11 9.6	+ 0.1	9.2	1.0
20	5 34 33.72	0.63	0.70	22 11 11.0	0.1	9.2	1.0
21	5 34 18.85	0.61	0.70	22 11 12.7	0.1	9.2	1.0
22	5 34 4.34	0.60	0.70	22 11 14.6	0.1	9.2	1.0
23	5 33 50.21	0.58	0.70	22 11 16.7	0.1	9.2	1.0
24	5 33 36.45	0.57	0.69	22 11 19.1	0.1	9.1	1.0
25	5 33 23.08	0.55	0.69	22 11 21.8	0.1	9.1	1.0
26	5 33 10.10	0.53	0.69	22 11 24.7	0.1	9.1	1.0
27	5 32 57.52	0.52	0.69	22 11 27.9	0.1	9.1	1.0
28	5 32 45.34	0.50	0.69			9.1	1.0
29	5 32 33.57	0.48	0.69			9.1	1.0
30	5 32 22.22	0.46	0.69			9.1	1.0
31	5 32 11.29	0.45	0.69			9.1	1.0
32	5 32 0.79	- 0.43	0.				1.0

SATURN.

FEBRUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vec.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	5 32 4.60	N.22 11 46.4	0.9204637	8 47.0	88 13 26.2	S. 1 1 23.3	0.9548009
2	5 31 54.34	22 11 51.3	.9211177	8 42.9	88 15 41.1	1 1 18.0	.9548005
3	5 31 44.53	22 11 56.5	.9217811	8 38.8	88 17 56.0	1 1 12.6	.9548000
4	5 31 35.16	22 12 2.0	.9224536	8 34.7	88 20 10.9	1 1 7.3	.9547996
5	5 31 26.25	22 12 7.9	.9231350	8 30.6	88 22 25.8	1 1 1.9	.9547992
6	5 31 17.78	22 12 14.1	.9238249	8 26.6	88 24 40.7	1 0 56.6	.9547988
7	5 31 9.78	22 12 20.7	.9245230	8 22.5	88 26 55.6	1 0 51.2	.9547985
8	5 31 2.24	22 12 27.6	.9252290	8 18.5	88 29 10.4	1 0 45.9	.9547981
9	5 30 55.17	22 12 34.8	.9259426	8 14.4	88 31 25.3	1 0 40.5	.9547978
10	5 30 48.57	22 12 42.4	.9266635	8 10.4	88 33 40.2	1 0 35.2	.9547974
11	5 30 42.44	22 12 50.3	.9273914	8 6.4	88 35 55.1	1 0 29.8	.9547971
12	5 30 36.79	22 12 58.6	.9281260	8 2.3	88 38 10.0	1 0 24.4	.9547967
13	5 30 31.62	22 13 7.3	.9288669	7 58.3	88 40 24.9	1 0 19.1	.9547964
14	5 30 26.93	22 13 16.3	.9296140	7 54.3	88 42 39.8	1 0 13.7	.9547961
15	5 30 22.72	22 13 25.6	.9303668	7 50.3	88 44 54.7	1 0 8.3	.9547958
16	5 30 18.99	22 13 35.3	.9311251	7 46.3	88 47 9.6	1 0 3.0	.9547955
17	5 30 15.75	22 13 45.4	.9318885	7 42.3	88 49 24.5	0 59 57.6	.9547952
18	5 30 12.99	22 13 55.8	.9326569	7 38.4	88 51 39.3	0 59 52.2	.9547949
19	5 30 10.71	22 14 6.5	.9334300	7 34.4	88 53 54.2	0 59 46.9	.9547947
20	5 30 8.92	22 14 17.6	.9342074	7 30.4	88 56 9.1	0 59 41.5	.9547944
21	5 30 7.62	22 14 29.1	.9349889	7 26.5	88 58 24.0	0 59 36.1	.9547942
22	5 30 6.80	22 14 40.9	.9357743	7 22.5	89 0 38.9	0 59 30.7	.9547939
23	5 30 6.47	22 14 53.1	.9365632	7 18.6	89 2 53.7	0 59 25.3	.9547937
24	5 30 6.63	22 15 5.6	.9373555	7 14.7	89 5 8.6	0 59 20.0	.9547935
25	5 30 7.27	22 15 18.5	.9381508	7 10.8	89 7 23.4	0 59 14.6	.9547932
26	5 30 8.40	22 15 31.7	.9389490	7 6.9	89 9 38.3	0 59 9.2	.9547930
27	5 30 10.02	22 15 45.2	.9397497	7 3.0	89 11 53.2	0 59 3.8	.9547928
28	5 30 12.13	22 15 59.1	.9405528	6 59.1	89 14 8.0	0 58 58.4	.9547926
29	5 30 14.72	22 16 13.3	.9413579	6 55.2	89 16 22.9	0 58 53.0	.9547924
30	5 30 17.80	N.22 16 27.8	0.9421648	6 51.3	89 18 37.8	S. 0 58 47.6	0.9547923

SATURN.

351

FEBRUARY, 1856.

At Transit over the Meridian of Greenwich.

<i>Apparent Right Ascension.</i>	<i>Variation of Right Asc. in 1 Hour of Long.</i>	<i>Sid. Time of Sem. pass. Mer.</i>	<i>Apparent Declination.</i>	<i>Variation of Declination in 1 Hour of Long.</i>	<i>Semi- diameter.</i>	<i>Hor. Par.</i>
h m s	s	s	° ' "	"	"	"
5 32 0.79	- 0.43	0.69	N.22 11 48.2	+ 0.2	9.0	1.0
5 31 50.73	0.41	0.69	22 11 53.2	0.2	9.0	1.0
5 31 41.10	0.39	0.69	22 11 58.5	0.2	9.0	1.0
5 31 31.92	0.37	0.69	22 12 4.1	0.2	9.0	1.0
5 31 23.19	0.35	0.69	22 12 10.1	0.2	9.0	1.0
5 31 14.92	0.34	0.69	22 12 16.4	0.3	9.0	1.0
5 31 7.10	0.32	0.68	22 12 23.0	0.3	8.9	1.0
5 30 59.74	0.30	0.68	22 12 30.0	0.3	8.9	1.0
5 30 52.85	0.28	0.68	22 12 37.4	0.3	8.9	1.0
5 30 46.43	0.26	0.68	22 12 45.1	0.3	8.9	1.0
5 30 40.48	0.24	0.68	22 12 53.1	0.3	8.9	1.0
5 30 35.01	0.22	0.68	22 13 1.5	0.4	8.9	1.0
5 30 30.01	0.20	0.68	22 13 10.2	0.4	8.9	1.0
5 30 25.49	0.18	0.68	22 13 19.3	0.4	8.8	1.0
5 30 21.45	0.16	0.68	22 13 28.8	0.4	8.8	1.0
5 30 17.89	0.14	0.68	22 13 38.5	0.4	8.8	1.0
5 30 14.81	0.12	0.68	22 13 48.7	0.4	8.8	1.0
5 30 12.21	0.10	0.68	22 13 59.1	0.4	8.8	1.0
5 30 10.09	0.08	0.68	22 14 10.0	0.5	8.8	1.0
5 30 8.46	0.06	0.67	22 14 21.2	0.5	8.7	1.0
5 30 7.31	0.04	0.67	22 14 32.7	0.5	8.7	1.0
5 30 6.65	- 0.02	0.67	22 14 44.6	0.5	8.7	1.0
5 30 6.47	0.00	0.67	22 14 56.9	0.5	8.7	1.0
5 30 6.77	+ 0.02	0.67	22 15 9.4	0.5	8.7	1.0
5 30 7.56	0.04	0.66	22 15 22.4	0.5	8.6	1.0
5 30 8.83	0.06	0.66	22 15 35.6	0.6	8.6	1.0
5 30 10.59	0.08	0.66	22 15 49.3	0.6	8.6	1.0
5 30 12.82	0.10	0.66	22	0.6	8.6	1.0
5 30 15.55	0.12	0.66	2	0.6	8.6	1.0
5 30 18.76	+ 0.14	0.66		0.6		1.0

MARCH, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 5 30 17.80	N. 22 16 27.8	0.9421648	h m 6 51.3	89 18 37.8	S. 0 58 47.6	0.9547923
2	5 30 21.36	22 16 42.7	.9429731	6 47.4	89 20 52.6	0 58 42.2	.9547921
3	5 30 25.41	22 16 57.9	.9437828	6 43.6	89 23 7.5	0 58 36.9	.9547920
4	5 30 29.95	22 17 13.4	.9445934	6 39.7	89 25 22.3	0 58 31.5	.9547918
5	5 30 34.97	22 17 29.2	.9454047	6 35.9	89 27 37.2	0 58 26.1	.9547917
6	5 30 40.48	22 17 45.4	.9462165	6 32.0	89 29 52.0	0 58 20.7	.9547915
7	5 30 46.47	22 18 1.8	.9470285	6 28.2	89 32 6.9	0 58 15.3	.9547914
8	5 30 52.93	22 18 18.5	.9478404	6 24.4	89 34 21.8	0 58 9.9	.9547913
9	5 30 59.87	22 18 35.5	.9486520	6 20.6	89 36 36.6	0 58 4.5	.9547911
10	5 31 7.29	22 18 52.8	.9494631	6 16.8	89 38 51.5	0 57 59.1	.9547911
11	5 31 15.18	22 19 10.4	.9502733	6 13.0	89 41 6.3	0 57 53.7	.9547911
12	5 31 23.54	22 19 28.2	.9510825	6 9.2	89 43 21.2	0 57 48.2	.9547911
13	5 31 32.36	22 19 46.2	.9518925	6 5.4	89 45 36.0	0 57 42.8	.9547910
14	5 31 41.65	22 20 4.5	.9526969	6 1.6	89 47 50.9	0 57 37.4	.9547909
15	5 31 51.40	22 20 23.1	.9535016	5 57.8	89 50 5.7	0 57 32.0	.9547909
16	5 32 1.60	22 20 41.8	.9543043	5 54.1	89 52 20.6	0 57 26.6	.9547909
17	5 32 12.26	22 21 0.7	.9551048	5 50.3	89 54 35.4	0 57 21.2	.9547909
18	5 32 23.36	22 21 19.9	.9559030	5 46.6	89 56 50.3	0 57 15.8	.9547909
19	5 32 34.91	22 21 39.2	.9566986	5 42.8	89 59 5.1	0 57 10.4	.9547909
20	5 32 46.90	22 21 58.7	.9574916	5 39.1	90 1 20.0	0 57 5.0	.9547909
21	5 32 59.33	22 22 18.4	.9582816	5 35.4	90 3 34.8	0 56 59.5	.9547909
22	5 33 12.19	22 22 38.2	.9590685	5 31.7	90 5 49.7	0 56 54.1	.9547910
23	5 33 25.48	22 22 58.2	.9598522	5 28.0	90 8 4.6	0 56 48.6	.9547911
24	5 33 39.21	22 23 18.3	.9606325	5 24.3	90 10 19.4	0 56 43.2	.9547911
25	5 33 53.35	22 23 38.6	.9614092	5 20.6	90 12 34.3	0 56 37.7	.9547912
26	5 34 7.92	22 23 59.0	.9621820	5 16.9	90 14 49.1	0 56 32.3	.9547913
27	5 34 22.91	22 24 19.6	.9629509	5 13.2	90 17 4.0	0 56 26.8	.9547914
28	5 34 38.31	22 24 40.2	.9637157	5 9.5	90 19 18.9	0 56 21.4	.9547915
29	5 34 54.12	22 25 0.9	.9644762	5 5.8	90 21 33.7	0 56 15.9	.9547917
30	5 35 10.35	22 25 21.7	.9652321	5 2.2	90 23 48.6	0 56 10.5	.9547918
31	5 35 26.97	22 25 42.6	.9659834	4 58.5	90 26 3.5	0 56 5.0	.9547919
32	5 35 44.00	N. 22 26 3.6	0.9667299	4 54.9	90 28 18.3	S. 0 55 59.6	0.9547921

SATURN.

353

MARCH, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	+ s	s	° ' "	+ "	"	"
5 30 18.76	+ 0.14	0.66	N.22 16 32.0	+ 0.6	8.6	1.0
5 30 22.46	0.16	0.66	22 16 47.0	0.6	8.5	1.0
5 30 26.64	0.18	0.66	22 17 2.2	0.6	8.5	1.0
5 30 31.30	0.20	0.66	22 17 17.8	0.6	8.5	1.0
5 30 36.44	0.22	0.66	22 17 33.6	0.7	8.5	1.0
5 30 42.06	0.24	0.66	22 17 49.8	0.7	8.5	1.0
5 30 48.16	0.26	0.66	22 18 6.3	0.7	8.5	1.0
5 30 54.74	0.28	0.65	22 18 23.0	0.7	8.4	1.0
5 31 1.79	0.30	0.65	22 18 40.1	0.7	8.4	1.0
5 31 9.31	0.32	0.65	22 18 57.4	0.7	8.4	1.0
5 31 17.30	0.34	0.65	22 19 14.9	0.7	8.4	1.0
5 31 25.76	0.36	0.65	22 19 32.8	0.8	8.4	1.0
5 31 34.68	0.38	0.65	22 19 50.9	0.8	8.4	1.0
5 31 44.06	0.40	0.64	22 20 9.2	0.8	8.3	1.0
5 31 53.89	0.42	0.64	22 20 27.7	0.8	8.3	1.0
5 32 4.18	0.44	0.64	22 20 46.4	0.8	8.3	1.0
5 32 14.92	0.46	0.64	22 21 5.4	0.8	8.3	1.0
5 32 26.10	0.48	0.64	22 21 24.5	0.8	8.3	0.9
5 32 37.72	0.49	0.64	22 21 43.8	0.8	8.3	0.9
5 32 49.79	0.51	0.63	22 22 3.3	0.8	8.3	0.9
5 33 2.28	0.53	0.63	22 22 23.0	0.8	8.3	0.9
5 33 15.22	0.55	0.63	22 22 42.8	0.8	8.3	0.9
5 33 28.57	0.57	0.63	22 23 2.8	0.8	8.3	0.9
5 33 42.36	0.58	0.63	22 23 22.9	0.8	8.3	0.9
5 33 56.56	0.60	0.63	22 23 43.2	0.8	8.3	0.9
5 34 11.19	0.62	0.63	22 24 3.6	0.9	8.2	0.9
5 34 26.22	0.64	0.63	22 24 24.0	0.9	8.2	0.9
5 34 41.68			22 24 44.1	0.9	8.2	0.9
5 34 57.54			22 25	0.9	8.2	0.9
5 35 13.80			22 25	0.9	8.2	0.9
5 35 30.47			22 25	0.9	8.2	0.9
5 35 47.53			22 26		8.2	0.9

SATURN.

APRIL, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	L. Ra.
	Noon.	Noon.	Noon.		Noon.	Noon.	
	h m s	° ' "		h m	° ' "	° ' "	
1	5 35 44.00	N.22 26 3.6	.9667299	4 54.9	90 28 18.3	S. 55 59.6	0.9
2	5 36 1.42	22 26 24.6	.9674713	4 51.2	90 30 33.2	55 54.1	.9
3	5 36 19.24	22 26 45.6	.9682076	4 47.6	90 32 48.1	55 48.7	.9
4	5 36 37.45	22 27 6.7	.9689385	4 44.0	90 35 2.9	55 43.2	.9
5	5 36 56.04	22 27 27.7	.9696639	4 40.3	90 37 17.8	55 37.8	.9
6	5 37 15.01	22 27 48.8	.9703836	4 36.7	90 39 32.7	55 32.3	.9
7	5 37 34.36	22 28 9.9	.9710976	4 33.1	90 41 47.5	55 26.9	.9
8	5 37 54.07	22 28 30.9	.9718055	4 29.5	90 44 2.4	55 21.5	.9
9	5 38 14.15	22 28 51.9	.9725073	4 25.9	90 46 17.3	55 16.0	.9
10	5 38 34.59	22 29 12.8	.9732028	4 22.3	90 48 32.1	55 10.6	.9
11	5 38 55.39	22 29 33.7	.9738920	4 18.8	90 50 47.0	55 5.2	.9
12	5 39 16.53	22 29 54.5	.9745746	4 15.2	90 53 1.9	54 59.7	.9
13	5 39 38.02	22 30 15.2	.9752505	4 11.6	90 55 16.8	54 54.3	.9
14	5 39 59.86	22 30 35.8	.9759197	4 8.0	90 57 31.6	54 48.9	.9
15	5 40 22.02	22 30 56.3	.9765820	4 4.5	90 59 46.5	54 43.4	.9
16	5 40 44.51	22 31 16.7	.9772372	4 0.9	91 2 1.4	54 38.0	.9
17	5 41 7.33	22 31 36.9	.9778854	3 57.3	91 4 16.3	54 32.6	.9
18	5 41 30.47	22 31 57.0	.9785264	3 53.8	91 6 31.2	54 27.2	.9
19	5 41 53.93	22 32 17.0	.9791600	3 50.3	91 8 46.0	54 21.7	.9
20	5 42 17.70	22 32 36.8	.9797864	3 46.7	91 11 0.9	54 16.3	.9
21	5 42 41.77	22 32 56.4	.9804052	3 43.2	91 13 15.8	54 10.9	.9
22	5 43 6.15	22 33 15.8	.9810165	3 39.7	91 15 30.7	54 5.4	.9
23	5 43 30.82	22 33 35.1	.9816203	3 36.1	91 17 45.6	54 0.0	.9
24	5 43 55.79	22 33 54.2	.9822162	3 32.6	91 20 0.5	53 54.5	.9
25	5 44 21.05	22 34 13.0	.9828044	3 29.1	91 22 15.4	53 49.0	.9
26	5 44 46.60	22 34 31.6	.9833846	3 25.6	91 24 30.3	53 43.6	.9
27	5 45 12.42	22 34 50.0	.9839568	3 22.1	91 26 45.2	53 38.1	.9
28	5 45 38.52	22 35 8.1	.9845209	3 18.6	91 29 0.0	53 32.6	.9
29	5 46 4.89	22 35 26.0	.9850768	3 15.1	91 31 14.9	53 27.2	.9
30	5 46 31.53	22 35 43.6	.9856244	3 11.6	91 33 29.8	53 21.7	.9
31	5 46 58.43	N.22 36 1.0	.9861636	3 8.1	91 35 44.7	S. 53 16.2	0.9

APRIL, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	+	s	° ' "	"	"	"
5 35 47.53	+ 0.72	0.63	N.22 26 7.9	+ 0.9	8.2	0.9
5 36 4.99	0.74	0.63	22 26 28.8	0.9	8.1	0.9
5 36 22.84	0.75	0.62	22 26 49.8	0.9	8.1	0.9
5 36 41.08	0.77	0.62	22 27 10.8	0.9	8.1	0.9
5 36 59.70	0.78	0.62	22 27 31.8	0.9	8.1	0.9
5 37 18.69	0.80	0.62	22 27 52.9	0.9	8.1	0.9
5 37 38.06	0.81	0.62	22 28 13.9	0.9	8.1	0.9
5 37 57.80	0.83	0.62	22 28 34.8	0.9	8.1	0.9
5 38 17.90	0.84	0.62	22 28 55.8	0.9	8.0	0.9
5 38 38.35	0.86	0.62	22 29 16.6	0.9	8.0	0.9
5 38 59.16	0.87	0.62	22 29 37.4	0.9	8.0	0.9
5 39 20.32	0.89	0.62	22 29 58.1	0.9	8.0	0.9
5 39 41.82	0.90	0.62	22 30 18.8	0.9	8.0	0.9
5 40 3.65	0.92	0.62	22 30 39.3	0.9	8.0	0.9
5 40 25.82	0.93	0.62	22 30 59.8	0.9	8.0	0.9
5 40 48.31	0.94	0.62	22 31 20.1	0.8	7.9	0.9
5 41 11.13	0.96	0.62	22 31 40.2	0.8	7.9	0.9
5 41 34.26	0.97	0.62	22 32 0.3	0.8	7.9	0.9
5 41 57.71	0.98	0.62	22 32 20.2	0.8	7.9	0.9
5 42 21.47	1.00	0.62	22 32 39.9	0.8	7.9	0.9
5 42 45.53	1.01	0.62	22 32 59.4	0.8	7.9	0.9
5 43 9.89	1.02	0.62	22 33 18.8	0.8	7.9	0.9
5 43 34.55	1.03	0.62	22 33 38.0	0.8	7.9	0.9
5 43 59.51	1.05	0.61	22 33 57.0	0.8	7.8	0.9
5 44 24.75	1.06	0.61	22 34 15.7	0.8	7.8	0.9
5 44 50.27	1.07	0.61	22 34 34.2	0.8	7.8	0.9
5 45 16.07	1.08	0.61	22 34 52.6		7.8	0.9
5 45 42.14	1.09	0.61	22 35		7.8	
5 46 8.48	1.10	0.61	22 35		7.8	
5 46 35.09	1.11	0.61	22 35		7.8	
5 47 1.96	+ 1.13	0.61	N.22		8	

MAY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	I Ra
	Noon.	Noon.	Noon.		Noon.	Noon.	
	h m s	° ' "		h m	° ' "	° ' "	
1	5 46 58.43	N.22 36 1.0	0.9861636	3 8.1	91 35 44.7	S.0 53 16.2	0.9
2	5 47 25.59	22 36 18.0	.9866943	3 4.7	91 37 59.6	0 53 10.7	.9
3	5 47 53.00	22 36 34.8	.9872164	3 1.2	91 40 14.5	0 53 5.3	.9
4	5 48 20.66	22 36 51.3	.9877298	2 57.7	91 42 29.4	0 52 59.8	.9
5	5 48 48.57	22 37 7.5	.9882345	2 54.2	91 44 44.3	0 52 54.3	.9
6	5 49 16.71	22 37 23.3	.9887303	2 50.9	91 46 59.2	0 52 48.8	.9
7	5 49 45.09	22 37 38.8	.9892172	2 47.3	91 49 14.1	0 52 43.3	.9
8	5 50 13.69	22 37 54.0	.9896951	2 43.9	91 51 29.1	0 52 37.8	.9
9	5 50 42.52	22 38 8.8	.9901640	2 40.4	91 53 44.0	0 52 32.4	.9
10	5 51 11.56	22 38 23.2	.9906237	2 37.0	91 55 58.9	0 52 26.9	.9
11	5 51 40.81	22 38 37.3	.9910742	2 33.5	91 58 13.8	0 52 21.4	.9
12	5 52 10.26	22 38 51.0	.9915156	2 30.1	92 0 28.7	0 52 15.9	.9
13	5 52 39.92	22 39 4.3	.9919476	2 26.6	92 2 43.6	0 52 10.4	.9
14	5 53 9.78	22 39 17.2	.9923704	2 23.2	92 4 58.5	0 52 4.9	.9
15	5 53 39.82	22 39 29.7	.9927838	2 19.8	92 7 13.4	0 51 59.4	.9
16	5 54 10.05	22 39 41.8	.9931879	2 16.3	92 9 28.3	0 51 53.9	.9
17	5 54 40.46	22 39 53.4	.9935826	2 12.9	92 11 43.2	0 51 48.4	.9
18	5 55 11.05	22 40 4.7	.9939678	2 9.5	92 13 58.2	0 51 42.9	.9
19	5 55 41.81	22 40 15.5	.9943435	2 6.1	92 16 13.1	0 51 37.4	.9
20	5 56 12.74	22 40 25.9	.9947097	2 2.6	92 18 28.0	0 51 31.9	.9
21	5 56 43.83	22 40 35.8	.9950664	1 59.2	92 20 42.9	0 51 26.4	.9
22	5 57 15.08	22 40 45.3	.9954135	1 55.8	92 22 57.8	0 51 20.9	.9
23	5 57 46.49	22 40 54.4	.9957509	1 52.4	92 25 12.7	0 51 15.4	.9
24	5 58 18.04	22 41 3.0	.9960786	1 49.0	92 27 27.7	0 51 9.9	.9
25	5 58 49.74	22 41 11.2	.9963966	1 45.6	92 29 42.6	0 51 4.4	.9
26	5 59 21.59	22 41 18.9	.9967049	1 42.2	92 31 57.5	0 50 58.8	.9
27	5 59 53.57	22 41 26.1	.9970033	1 38.8	92 34 12.4	0 50 53.3	.9
28	6 0 25.69	22 41 32.8	.9972919	1 35.4	92 36 27.4	0 50 47.8	.9
29	6 0 57.93	22 41 39.1	.9975706	1 32.0	92 38 42.3	0 50 42.3	.9
30	6 1 30.30	22 41 44.8	.9978394	1 28.6	92 40 57.2	0 50 36.8	.9
31	6 2 2.79	22 41 50.0	.9980981	1 25.2	92 43 12.2	0 50 31.3	.9
32	6 2 35.40	N.22 41 54.8	0.9983469	1 21.8	92 45 27.1	S.0 50 25.7	0.9

SATURN.

357

MAY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sen. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	+ s	s	° ' "	+ "	"	"
5 47 1'96	+ 1'13	0'61	N.22 36 3'2	+ 0'7	7'8	0'9
5 47 29'09	1'14	0'61	22 36 20'2	0'7	7'8	0'9
5 47 56'47	1'15	0'61	22 36 36'9	0'7	7'8	0'9
5 48 24'09	1'16	0'60	22 36 53'3	0'7	7'7	0'9
5 48 51'96	1'17	0'60	22 37 9'4	0'7	7'7	0'9
5 49 20'07	1'18	0'60	22 37 25'2	0'7	7'7	0'9
5 49 48'40	1'19	0'60	22 37 40'6	0'6	7'7	0'9
5 50 16'96	1'20	0'60	22 37 55'7	0'6	7'7	0'9
5 50 45'74	1'20	0'60	22 38 10'4	0'6	7'7	0'9
5 51 14'74	1'21	0'60	22 38 24'8	0'6	7'7	0'9
5 51 43'94	1'22	0'60	22 38 38'8	0'6	7'7	0'9
5 52 13'34	1'23	0'60	22 38 52'4	0'6	7'7	0'9
5 52 42'95	1'24	0'60	22 39 5'6	0'5	7'7	0'9
5 53 12'76	1'25	0'60	22 39 18'5	0'5	7'7	0'9
5 53 42'75	1'25	0'60	22 39 30'9	0'5	7'6	0'9
5 54 12'92	1'26	0'60	22 39 42'9	0'5	7'6	0'9
5 54 43'28	1'27	0'60	22 39 54'5	0'5	7'6	0'9
5 55 13'81	1'28	0'60	22 40 5'7	0'5	7'6	0'9
5 55 44'51	1'28	0'60	22 40 16'4	0'4	7'6	0'9
5 56 15'38	1'29	0'60	22 40 26'7	0'4	7'6	0'9
5 56 46'41	1'30	0'60	22 40 36'6	0'4	7'6	0'9
5 57 17'60	1'30	0'60	22 40 46'1	0'4	7'6	0'9
5 57 48'94	1'31	0'60	22 40 55'1	0'4	7'6	0'9
5 58 20'44	1'32	0'60	22 41 3'7	0'3	7'6	0'9
5 58 52'07	1'32	0'60	22 41 11'8	0'3	7'6	0'9
5 59 23'85	1'33	0'60	22 41 19	0'3	7'6	0'9
5 59 55'77	1'33	0'60	22 41 2	0'3	7'6	0'9
6 0 27'82	1'34	0'60	22		7'6	0'9
6 1 0'00	1'34	0'60	22		7'6	0'9
6 1 32'30	1'35	0'60	22		7'	0'9
6 2 4'72	1'35	0'59	22		7'	0'9
6 2 37'25	+ 1'36	0'59	N.			

JUNE, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Lo Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N
1	6 2 35.40	N.22 41 54.8	0.9983469	1 21.8	92 45 27.1	S.0 50 25.7	0.95
2	6 3 8.11	22 41 59.0	0.9985855	1 18.4	92 47 42.0	0 50 20.2	0.95
3	6 3 40.93	22 42 2.7	0.9988140	1 15.0	92 49 56.9	0 50 14.7	0.95
4	6 4 13.85	22 42 5.9	0.9990323	1 11.6	92 52 11.9	0 50 9.2	0.95
5	6 4 46.86	22 42 8.6	0.9992404	1 8.2	92 54 26.8	0 50 3.6	0.95
6	6 5 19.96	22 42 10.8	0.9994384	1 4.9	92 56 41.7	0 49 58.1	0.95
7	6 5 53.14	22 42 12.5	0.9996261	1 1.5	92 58 56.6	0 49 52.6	0.95
8	6 6 26.40	22 42 13.6	0.9998037	0 58.1	93 1 11.6	0 49 47.1	0.95
9	6 6 59.73	22 42 14.2	0.9999711	0 54.7	93 3 26.5	0 49 41.5	0.95
10	6 7 33.13	22 42 14.3	1.0001282	0 51.3	93 5 41.4	0 49 36.0	0.95
11	6 8 6.60	22 42 13.8	0.0002752	0 48.0	93 7 56.3	0 49 30.5	0.95
12	6 8 40.12	22 42 12.9	0.0004119	0 44.6	93 10 11.3	0 49 24.9	0.95
13	6 9 13.69	22 42 11.4	0.0005384	0 41.2	93 12 26.2	0 49 19.4	0.95
14	6 9 47.32	22 42 9.4	0.0006547	0 37.8	93 14 41.1	0 49 13.9	0.95
15	6 10 20.99	22 42 6.9	0.0007608	0 34.5	93 16 56.1	0 49 8.3	0.95
16	6 10 54.71	22 42 3.9	0.0008566	0 31.1	93 19 11.0	0 49 2.8	0.95
17	6 11 28.46	22 42 0.3	0.0009423	0 27.7	93 21 25.9	0 48 57.2	0.95
18	6 12 2.24	22 41 56.2	0.0010177	0 24.3	93 23 40.8	0 48 51.7	0.95
19	6 12 36.05	22 41 51.6	0.0010829	0 21.0	93 25 55.8	0 48 46.2	0.95
20	6 13 9.89	22 41 46.5	0.0011378	0 17.6	93 28 10.7	0 48 40.6	0.95
21	6 13 43.75	22 41 40.8	0.0011825	0 14.2	93 30 25.6	0 48 35.0	0.95
22	6 14 17.62	22 41 34.6	0.0012170	0 10.9	93 32 40.6	0 48 29.4	0.95
23	6 14 51.51	22 41 27.9	0.0012412	0 7.5	93 34 55.5	0 48 23.9	0.95
24	6 15 25.41	22 41 20.7	0.0012551	0 4.1	93 37 10.4	0 48 18.3	0.95
25	6 15 59.30	22 41 12.9	0.0012587	{ 0.08 } 23 57.4	93 39 25.3	0 48 12.7	0.95
26	6 16 33.20	22 41 4.6	0.0012520	23 54.0	93 41 40.2	0 48 7.2	0.95
27	6 17 7.09	22 40 55.8	0.0012350	23 50.6	93 43 55.2	0 48 1.6	0.95
28	6 17 40.98	22 40 46.5	0.0012076	23 47.3	93 46 10.1	0 47 56.0	0.95
29	6 18 14.85	22 40 36.7	0.0011699	23 43.9	93 48 25.0	0 47 50.4	0.95
30	6 18 48.69	22 40 26.4	0.0011219	23 40.5	93 50 39.9	0 47 44.9	0.95
31	6 19 22.52	N.22 40 15.5	1.0010635	23 37.2	93 52 54.8	S.0 47 39.3	0.95

SATURN.

359

JUNE, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	h m s	+ "	s	° ' "	"	"	"
1	6 2 37.25	+ 1.36	0.59	N.22 41 55.0	+ 0.2	7.5	0.9
2	6 3 9.90	1.36	0.59	22 41 59.2	0.2	7.5	0.9
3	6 3 42.64	1.37	0.59	22 42 2.9	0.1	7.5	0.9
4	6 4 15.49	1.37	0.59	22 42 6.1	0.1	7.5	0.9
5	6 4 48.42	1.37	0.59	22 42 8.8	0.1	7.5	0.9
6	6 5 21.45	1.38	0.59	22 42 10.9	0.1	7.5	0.9
7	6 5 54.56	1.38	0.59	22 42 12.5	+ 0.1	7.5	0.9
8	6 6 27.74	1.38	0.59	22 42 13.6	0.0	7.5	0.9
9	6 7 1.00	1.39	0.59	22 42 14.2	0.0	7.5	0.9
10	6 7 34.32	1.39	0.59	22 42 14.3	0.0	7.5	0.9
11	6 8 7.71	1.39	0.59	22 42 13.8	0.0	7.5	0.9
12	6 8 41.15	1.39	0.59	22 42 12.8	- 0.1	7.5	0.9
13	6 9 14.65	1.40	0.59	22 42 11.4	0.1	7.5	0.9
14	6 9 48.20	1.40	0.59	22 42 9.3	0.1	7.5	0.9
15	6 10 21.80	1.40	0.59	22 42 6.8	0.1	7.5	0.9
16	6 10 55.43	1.40	0.59	22 42 3.8	0.1	7.5	0.9
17	6 11 29.11	1.40	0.59	22 42 0.2	0.2	7.5	0.9
18	6 12 2.81	1.41	0.59	22 41 56.2	0.2	7.5	0.9
19	6 12 36.55	1.41	0.59	22 41 51.6	0.2	7.5	0.9
20	6 13 10.31	1.41	0.59	22 41 46.4	0.2	7.5	0.9
21	6 13 44.08	1.41	0.59	22 41 40.8	0.2	7.5	0.9
22	6 14 17.88	1.41	0.59	22 41 34.6	0.3	7.5	0.9
23	6 14 51.69	1.41	0.59	22 41 27.9	0.3	7.5	0.9
24	{ 6 15 25.30 }	{ 1.41 }	{ 0.59 }	{ 22 41 20.6 }	{ 0.3 }	{ 7.5 }	{ 0.9 }
25	6 16 33.14	1.41	0.59	22 41 4.6	0.3	7.5	0.9
26	6 17 6.95	1.41	0.59	22 40 55.9	0.4	7.5	0.9
27	6 17 40.76	1.41	0.59	22 40 46.6	0.4	7.5	
28	6 18 14.55	1.41	0.59	22 40 36.8	0.4	7.5	
29	6 18 48.32	1.41	0.59	22 40 26.5	0.4	7.5	
30	6 19 22.06	1.41	0.59	22 40 15.7	0.5	7.5	
31	6 19 55.77	+ 1.40	0.59	N.22 40 4.4	- 0.5	7	

JULY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vec.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	6 19 22.52	N.22 40 15.5	1.0010635	23 37.2	93 52 54.8	S. 047 39.3	0.9548486
2	6 19 56.31	22 40 4.2	.0009947	23 33.8	93 55 9.8	047 33.8	.9548497
3	6 20 30.07	22 39 52.4	.0009155	23 30.4	93 57 24.7	047 28.2	.9548507
4	6 21 3.78	22 39 40.0	.0008261	23 27.1	93 59 39.6	047 22.6	.9548518
5	6 21 37.45	22 39 27.2	.0007263	23 23.7	94 1 54.5	047 17.1	.9548529
6	6 22 11.07	22 39 13.8	.0006162	23 20.3	94 4 9.4	047 11.5	.9548540
7	6 22 44.64	22 39 0.0	.0004959	23 16.9	94 6 24.3	047 5.9	.9548551
8	6 23 18.14	22 38 45.7	.0003653	23 13.5	94 8 39.2	047 0.4	.9548562
9	6 23 51.58	22 38 30.9	.0002245	23 10.2	94 10 54.1	046 54.8	.9548573
10	6 24 24.96	22 38 15.7	.0000736	23 6.8	94 13 9.1	046 49.3	.9548585
11	6 24 58.26	22 38 0.0	.9999126	23 3.4	94 15 24.0	046 43.7	.9548596
12	6 25 31.48	22 37 43.8	.9997414	23 0.0	94 17 38.9	046 38.2	.9548608
13	6 26 4.62	22 37 27.2	.9995601	22 56.6	94 19 53.8	046 32.6	.9548620
14	6 26 37.67	22 37 10.2	.9993688	22 53.2	94 22 8.7	046 27.1	.9548631
15	6 27 10.63	22 36 52.7	.9991675	22 49.9	94 24 23.6	046 21.5	.9548643
16	6 27 43.50	22 36 34.9	.9989561	22 46.5	94 26 38.5	046 16.0	.9548655
17	6 28 16.27	22 36 16.6	.9987348	22 43.1	94 28 53.4	046 10.4	.9548667
18	6 28 48.93	22 35 57.9	.9985036	22 39.7	94 31 8.3	046 4.9	.9548679
19	6 29 21.48	22 35 38.8	.9982623	22 36.3	94 33 23.2	045 59.3	.9548692
20	6 29 53.92	22 35 19.3	.9980112	22 32.9	94 35 38.1	045 53.8	.9548704
21	6 30 26.25	22 34 59.4	.9977502	22 29.5	94 37 53.0	045 48.2	.9548716
22	6 30 58.45	22 34 39.2	.9974793	22 26.1	94 40 7.9	045 42.6	.9548729
23	6 31 30.54	22 34 18.6	.9971985	22 22.7	94 42 22.8	045 37.1	.9548741
24	6 32 2.49	22 33 57.7	.9969079	22 19.3	94 44 37.7	045 31.5	.9548754
25	6 32 34.31	22 33 36.4	.9966074	22 15.9	94 46 52.6	045 25.9	.9548767
26	6 33 5.99	22 33 14.7	.9962972	22 12.5	94 49 7.4	045 20.3	.9548779
27	6 33 37.53	22 32 52.7	.9959772	22 9.1	94 51 22.3	045 14.7	.9548792
28	6 34 8.92	22 32 30.4	.9956474	22 5.6	94 53 37.2	045 9.1	.9548806
29	6 34 40.16	22 32 7.8	.9953080	22 2.2	94 55 52.1	045 3.5	.9548819
30	6 35 11.24	22 31 44.8	.9949589	21 58.8	94 58 7.0	044 57.9	.9548832
31	6 35 42.16	22 31 21.6	.9946001	21 55.4	95 0 21.9	044 52.4	.9548845
32	6 36 12.91	N.22 30 58.10	.9942318	21 52.0	95 2 36.7	S. 044 46.8	0.9548859

SATURN.

361

JULY, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 6 19 55.77	+ 1.40	0.59	N.22 40 4.4	- 0.5	7.5	0.9
2	6 20 29.45	1.40	0.59	22 39 52.6	0.5	7.5	0.9
3	6 21 3.09	1.40	0.59	22 39 40.3	0.5	7.5	0.9
4	6 21 36.68	1.40	0.59	22 39 27.5	0.5	7.5	0.9
5	6 22 10.22	1.40	0.59	22 39 14.2	0.6	7.5	0.9
6	6 22 43.71	1.39	0.59	22 39 0.4	0.6	7.5	0.9
7	6 23 17.14	1.39	0.59	22 38 46.1	0.6	7.5	0.9
8	6 23 50.50	1.39	0.59	22 38 31.4	0.6	7.5	0.9
9	6 24 23.80	1.39	0.59	22 38 16.2	0.6	7.5	0.9
10	6 24 57.03	1.38	0.59	22 38 0.6	0.7	7.5	0.9
11	6 25 30.17	1.38	0.59	22 37 44.5	0.7	7.5	0.9
12	6 26 3.24	1.37	0.59	22 37 27.9	0.7	7.5	0.9
13	6 26 36.22	1.37	0.59	22 37 11.0	0.7	7.5	0.9
14	6 27 9.11	1.37	0.59	22 36 53.6	0.7	7.5	0.9
15	6 27 41.90	1.36	0.59	22 36 35.7	0.8	7.5	0.9
16	6 28 14.60	1.36	0.59	22 36 17.5	0.8	7.5	0.9
17	6 28 47.18	1.36	0.59	22 35 58.9	0.8	7.5	0.9
18	6 29 19.67	1.35	0.59	22 35 39.9	0.8	7.5	0.9
19	6 29 52.04	1.35	0.59	22 35 20.4	0.8	7.5	0.9
20	6 30 24.30	1.34	0.59	22 35 0.7	0.8	7.6	0.9
21	6 30 56.43	1.34	0.59	22 34 40.5	0.8	7.6	0.9
22	6 31 28.45	1.33	0.59	22 34 20.0	0.9	7.6	0.9
23	6 32 0.33	1.33	0.59	22 33 59.1	0.9	7.6	0.9
24	6 32 32.09	1.32	0.59	22 33 37.9	0.9	7.6	0.9
25	6 33 3.70	1.31	0.59	22 33 16.3	0.9	7.6	0.9
26	6 33 35.18	1.31	0.59	22 32 54.4	0.9	7.6	0.9
27	6 34 6.51	1.30	0.59	22 32 32.1	0.9	7.6	0.9
28	6 34 37.69	1.30	0.59	22 32 9.6	0.9	7.6	0.9
29	6 35 8.71	1.29	0.59	22 31 46.7	1.0	7.6	0.9
30	6 35 39.57	1.28	0.59	22 31 23.6	1.0	7.6	0.9
31	6 36 10.26	1.28	0.59	22 31 0.2	1.0	7.6	0.9
32	6 36 40.77	+ 1.27	0.59	N.22 30 36.4	-	7.6	0.9

AUGUST, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	6 36 12.91	N.22 30 58.10	.9942318	21 52.0	95 2 36.7	S. 0 44 46.8	.9548859
2	6 36 43.48	22 30 34.3	.9938539	21 48.5	95 4 51.6	0 44 41.2	.9548872
3	6 37 13.88	22 30 10.3	.9934666	21 45.1	95 7 6.5	0 44 35.6	.9548886
4	6 37 44.09	22 29 46.0	.9930698	21 41.7	95 9 21.3	0 44 30.0	.9548899
5	6 38 14.11	22 29 21.4	.9926636	21 38.2	95 11 36.2	0 44 24.4	.9548913
6	6 38 43.94	22 28 56.7	.9922481	21 34.8	95 13 51.1	0 44 18.8	.9548927
7	6 39 13.57	22 28 31.7	.9918234	21 31.4	95 16 5.9	0 44 13.2	.9548941
8	6 39 43.00	22 28 6.5	.9913895	21 27.9	95 18 20.8	0 44 7.6	.9548956
9	6 40 12.21	22 27 41.2	.9909465	21 24.5	95 20 35.7	0 44 2.0	.9548970
10	6 40 41.22	22 27 15.6	.9904944	21 21.0	95 22 50.5	0 43 56.4	.9548984
11	6 41 10.01	22 26 49.9	.9900335	21 17.6	95 25 5.4	0 43 50.8	.9548998
12	6 41 38.58	22 26 24.1	.9895636	21 14.1	95 27 20.2	0 43 45.2	.9549013
13	6 42 6.93	22 25 58.1	.9890850	21 10.6	95 29 35.1	0 43 39.6	.9549027
14	6 42 35.05	22 25 32.0	.9885978	21 7.1	95 31 50.0	0 43 34.0	.9549042
15	6 43 2.94	22 25 5.8	.9881018	21 3.7	95 34 4.8	0 43 28.3	.9549057
16	6 43 30.59	22 24 39.5	.9875973	21 0.2	95 36 19.7	0 43 22.7	.9549072
17	6 43 58.00	22 24 13.1	.9870843	20 56.7	95 38 34.5	0 43 17.1	.9549087
18	6 44 25.17	22 23 46.6	.9865627	20 53.2	95 40 49.4	0 43 11.5	.9549102
19	6 44 52.08	22 23 20.1	.9860327	20 49.7	95 43 4.2	0 43 5.9	.9549117
20	6 45 18.74	22 22 53.5	.9854943	20 46.3	95 45 19.0	0 43 0.3	.9549132
21	6 45 45.14	22 22 26.9	.9849475	20 42.8	95 47 33.9	0 42 54.7	.9549148
22	6 46 11.28	22 22 0.3	.9843925	20 39.3	95 49 48.7	0 42 49.1	.9549163
23	6 46 37.15	22 21 33.6	.9838293	20 35.8	95 52 3.5	0 42 43.4	.9549179
24	6 47 2.74	22 21 6.9	.9832580	20 32.3	95 54 18.4	0 42 37.8	.9549195
25	6 47 28.06	22 20 40.3	.9826787	20 28.7	95 56 33.2	0 42 32.2	.9549210
26	6 47 53.09	22 20 13.7	.9820914	20 25.2	95 58 48.0	0 42 26.6	.9549226
27	6 48 17.84	22 19 47.1	.9814964	20 21.7	96 1 2.8	0 42 21.0	.9549243
28	6 48 42.29	22 19 20.6	.9808935	20 18.2	96 3 17.6	0 42 15.4	.9549259
29	6 49 6.44	22 18 54.2	.9802831	20 14.6	96 5 32.5	0 42 9.7	.9549275
30	6 49 30.29	22 18 27.9	.9796651	20 11.1	96 7 47.3	0 42 4.1	.9549292
31	6 49 53.83	22 18 1.7	.9790397	20 7.5	96 10 2.1	0 41 58.5	.9549308
32	6 50 17.05	N.22 17 35.60	.9784070	20 4.0	96 12 16.9	S. 0 41 52.90	.9549325

SATURN.

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AUGUST, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 6 36 40.77	+ s 1.27	s 0.59	N. 22 30 36.4	- " 1.0	" 7.6	" 0.9
2	6 37 11.11	1.26	0.59	22 30 12.5	1.0	7.6	0.9
3	6 37 41.27	1.25	0.59	22 29 48.2	1.0	7.6	0.9
4	6 38 11.24	1.24	0.59	22 29 23.8	1.0	7.6	0.9
5	6 38 41.01	1.24	0.59	22 28 59.1	1.0	7.7	0.9
6	6 39 10.59	1.23	0.59	22 28 34.2	1.0	7.7	0.9
7	6 39 39.97	1.22	0.59	22 28 9.1	1.0	7.7	0.9
8	6 40 9.14	1.21	0.59	22 27 43.9	1.1	7.7	0.9
9	6 40 38.10	1.20	0.59	22 27 18.4	1.1	7.7	0.9
10	6 41 6.84	1.19	0.59	22 26 52.8	1.1	7.7	0.9
11	6 41 35.37	1.18	0.59	22 26 27.0	1.1	7.7	0.9
12	6 42 3.68	1.17	0.59	22 26 1.1	1.1	7.7	0.9
13	6 42 31.76	1.16	0.59	22 25 35.1	1.1	7.7	0.9
14	6 42 59.60	1.16	0.59	22 25 8.9	1.1	7.7	0.9
15	6 43 27.22	1.15	0.59	22 24 42.7	1.1	7.7	0.9
16	6 43 54.59	1.14	0.60	22 24 16.4	1.1	7.8	0.9
17	6 44 21.72	1.13	0.60	22 23 50.0	1.1	7.8	0.9
18	6 44 48.60	1.12	0.60	22 23 23.6	1.1	7.8	0.9
19	6 45 15.24	1.10	0.60	22 22 57.1	1.1	7.8	0.9
20	6 45 41.61	1.09	0.60	22 22 30.5	1.1	7.8	0.9
21	6 46 7.72	1.08	0.60	22 22 3.9	1.1	7.8	0.9
22	6 46 33.56	1.07	0.60	22 21 37.3	1.1	7.8	0.9
23	6 46 59.13	1.06	0.60	22 21 10.7	1.1	7.8	0.9
24	6 47 24.43	1.05	0.60	22 20 44.2	1.1	7.8	0.9
25	6 47 49.44	1.04	0.60	22 20 17.6	1.1	7.8	0.9
26	6 48 14.17	1.02	0.61	22 19 51.1	1.1	7.9	0.9
27	6 48 38.60	1.01	0.61	22 19 24.6	1.1	7.9	0.9
28	6 49 2.74	1.00	0.61	22 18 58.3	1.1	7.9	0.9
29	6 49 26.58	0.99	0.61	22 18 32.0	1.1	7.9	0.9
30	6 49 50.11	0.97	0.61	22 18 5.9	1.1	7.9	0.9
31	6 50 13.33	0.96	0.61	22 17 39.8	1.1	7.9	0.9
32	6 50 36.23	+ 0.95	0.61	N. 22 17 13.9	- 1.1	7.9	0.9

SEPTEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vel.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	° ' "	
1	6 50 17.05	N.22 17 35.6	.9784070	20 4.0	96 12 16.9	S.0 41 52.9	.9549359
2	6 50 39.96	22 17 9.7	.9777671	20 0.4	96 14 31.7	0 41 47.2	.9549319
3	6 51 2.54	22 16 44.0	.9771201	19 56.9	96 16 46.5	0 41 41.6	.9549280
4	6 51 24.80	22 16 18.4	.9764663	19 53.3	96 19 1.3	0 41 36.0	.9549240
5	6 51 46.72	22 15 53.0	.9758056	19 49.7	96 21 16.1	0 41 30.3	.9549200
6	6 52 8.30	22 15 27.8	.9751382	19 46.1	96 23 31.0	0 41 24.7	.9549160
7	6 52 29.55	22 15 2.8	.9744643	19 42.6	96 25 45.8	0 41 19.1	.9549120
8	6 52 50.45	22 14 38.1	.9737840	19 39.0	96 28 0.6	0 41 13.5	.9549080
9	6 53 11.00	22 14 13.6	.9730973	19 35.4	96 30 15.4	0 41 7.8	.9549040
10	6 53 31.20	22 13 49.3	.9724046	19 31.8	96 32 30.2	0 41 2.2	.9549000
11	6 53 51.04	22 13 25.4	.9717058	19 28.2	96 34 45.0	0 40 56.6	.9548960
12	6 54 10.52	22 13 1.7	.9710011	19 24.6	96 36 59.8	0 40 50.9	.9548920
13	6 54 29.64	22 12 38.3	.9702907	19 20.9	96 39 14.6	0 40 45.3	.9548880
14	6 54 48.39	22 12 15.3	.9695747	19 17.3	96 41 29.3	0 40 39.7	.9548840
15	6 55 6.77	22 11 52.6	.9688532	19 13.7	96 43 44.1	0 40 34.0	.9548800
16	6 55 24.77	22 11 30.3	.9681263	19 10.0	96 45 58.9	0 40 28.4	.9548760
17	6 55 42.39	22 11 8.3	.9673942	19 6.4	96 48 13.7	0 40 22.7	.9548720
18	6 55 59.63	22 10 46.7	.9666570	19 2.7	96 50 28.5	0 40 17.1	.9548680
19	6 56 16.48	22 10 25.5	.9659148	18 59.1	96 52 43.3	0 40 11.4	.9548640
20	6 56 32.94	22 10 4.7	.9651677	18 55.4	96 54 58.1	0 40 5.8	.9548600
21	6 56 49.01	22 9 44.3	.9644160	18 51.7	96 57 12.8	0 40 0.1	.9548560
22	6 57 4.67	22 9 24.3	.9636598	18 48.1	96 59 27.6	0 39 54.4	.9548520
23	6 57 19.92	22 9 4.8	.9628992	18 44.4	97 1 42.4	0 39 48.8	.9548480
24	6 57 34.77	22 8 45.8	.9621345	18 40.7	97 3 57.2	0 39 43.1	.9548440
25	6 57 49.20	22 8 27.2	.9613657	18 37.0	97 6 12.0	0 39 37.4	.9548400
26	6 58 3.22	22 8 9.1	.9605932	18 33.3	97 8 26.7	0 39 31.8	.9548360
27	6 58 16.81	22 7 51.6	.9598170	18 29.6	97 10 41.5	0 39 26.1	.9548320
28	6 58 29.97	22 7 34.5	.9590374	18 25.9	97 12 56.3	0 39 20.5	.9548280
29	6 58 42.70	22 7 18.0	.9582545	18 22.1	97 15 11.1	0 39 14.8	.9548240
30	6 58 55.00	22 7 2.0	.9574686	18 18.4	97 17 25.9	0 39 9.2	.9548200
31	6 59 6.86	N.22 6 46.6	.9566799	18 14.7	97 19 40.6	S.0 39 3.5	.9548160

SEPTEMBER, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 6 50 36.23	+ s 0.95	s 0.61	° ' " N.22 17 13.9	" - 1.1	" 7.9	" 0.9
2	6 50 58.81	0.93	0.61	22 16 48.2	1.1	7.9	0.9
3	6 51 21.06	0.92	0.61	22 16 22.7	1.1	8.0	0.9
4	6 51 42.98	0.91	0.61	22 15 57.3	1.1	8.0	0.9
5	6 52 4.57	0.89	0.61	22 15 32.2	1.0	8.0	0.9
6	6 52 25.82	0.88	0.61	22 15 7.2	1.0	8.0	0.9
7	6 52 46.74	0.86	0.61	22 14 42.5	1.0	8.0	0.9
8	6 53 7.30	0.85	0.61	22 14 18.0	1.0	8.0	0.9
9	6 53 27.51	0.83	0.61	22 13 53.8	1.0	8.0	0.9
10	6 53 47.37	0.82	0.61	22 13 29.8	1.0	8.0	0.9
11	6 54 6.87	0.81	0.62	22 13 6.2	1.0	8.1	0.9
12	6 54 26.01	0.79	0.62	22 12 42.8	1.0	8.1	0.9
13	6 54 44.78	0.77	0.62	22 12 19.8	1.0	8.1	0.9
14	6 55 3.19	0.76	0.62	22 11 57.1	0.9	8.1	0.9
15	6 55 21.22	0.74	0.62	22 11 34.7	0.9	8.1	0.9
16	6 55 38.87	0.73	0.62	22 11 12.8	0.9	8.1	0.9
17	6 55 56.15	0.71	0.62	22 10 51.1	0.9	8.2	0.9
18	6 56 13.04	0.70	0.62	22 10 29.8	0.9	8.2	0.9
19	6 56 29.54	0.68	0.62	22 10 9.0	0.9	8.2	0.9
20	6 56 45.64	0.66	0.62	22 9 48.6	0.8	8.2	0.9
21	6 57 1.35	0.65	0.62	22 9 28.6	0.8	8.2	0.9
22	6 57 16.66	0.63	0.62	22 9 9.0	0.8	8.2	0.9
23	6 57 31.55	0.61	0.62	22 8 49.9	0.8	8.2	0.9
24	6 57 46.04	0.59	0.63	22 8 31.3	0.8	8.3	0.9
25	6 58 0.11	0.58	0.63	22 8 13.2	0.7	8.3	0.9
26	6 58 13.76	0.56	0.63	22 7 55.5	0.7	8.3	0.9
27	6 58 26.99	0.54	0.63	22 7 38.4	0.7	8.3	0.9
28	6 58 39.79	0.52	0.63	22 7 21.8	0.7	8.3	0.9
29	6 58 52.15	0.51	0.63	22 7 5.7	0.7	8.3	0.9
30	6 59 4.09	0.49	0.64	22 6 50.2	0.6	8.3	0.9
31	6 59 15.58	+ 0.47	0.64	N.22 6 35.2	- 0.6	8.3	0.9

OCTOBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad. V
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 6 59 6.86	N. 22 6 46.6	0.9566799	h m 18 14.7	0 19 40.6	S. 0 39 3.5	0.9544
2	6 59 18.28	22 6 31.7	.9558886	18 10.9	97 21 55.4	0 38 57.8	.9544
3	6 59 29.26	22 6 17.5	.9550948	18 7.2	97 24 10.2	0 38 52.2	.9544
4	6 59 39.79	22 6 3.8	.9542989	18 3.4	97 26 24.9	0 38 46.5	.9544
5	6 59 49.87	22 5 50.8	.9535011	17 59.6	97 28 39.7	0 38 40.9	.9544
6	6 59 59.50	22 5 38.3	.9527015	17 55.8	97 30 54.5	0 38 35.2	.9544
7	7 0 8.68	22 5 26.5	.9519004	17 52.0	97 33 9.3	0 38 29.6	.9544
8	7 0 17.40	22 5 15.3	.9510981	17 48.2	97 35 24.0	0 38 23.9	.9550
9	7 0 25.66	22 5 4.7	.9502946	17 44.5	97 37 38.8	0 38 18.3	.9550
10	7 0 33.46	22 4 54.8	.9494903	17 40.6	97 39 53.6	0 38 12.6	.9550
11	7 0 40.80	22 4 45.5	.9486854	17 36.8	97 42 8.3	0 38 7.0	.9550
12	7 0 47.68	22 4 36.9	.9478800	17 33.0	97 44 23.1	0 38 1.3	.9550
13	7 0 54.10	22 4 29.0	.9470744	17 29.2	97 46 37.9	0 37 55.7	.9550
14	7 1 0.04	22 4 21.7	.9462689	17 25.3	97 48 52.6	0 37 50.1	.9550
15	7 1 5.52	22 4 15.1	.9454636	17 21.5	97 51 7.4	0 37 44.4	.9550
16	7 1 10.52	22 4 9.2	.9446587	17 17.7	97 53 22.2	0 37 38.8	.9550
17	7 1 15.06	22 4 4.1	.9438544	17 13.8	97 55 36.9	0 37 33.1	.9550
18	7 1 19.11	22 3 59.6	.9430511	17 9.9	97 57 51.7	0 37 27.5	.9550
19	7 1 22.69	22 3 55.9	.9422488	17 6.1	98 0 6.5	0 37 21.8	.9550
20	7 1 25.79	22 3 52.9	.9414479	17 2.2	98 2 21.2	0 37 16.2	.9550
21	7 1 28.41	22 3 50.6	.9406487	16 58.3	98 4 36.0	0 37 10.5	.9550
22	7 1 30.55	22 3 49.1	.9398514	16 54.4	98 6 50.8	0 37 4.8	.9550
23	7 1 32.21	22 3 48.3	.9390563	16 50.5	98 9 5.5	0 36 59.1	.9550
24	7 1 33.38	22 3 48.2	.9382637	16 46.5	98 11 20.3	0 36 53.4	.9550
25	7 1 34.07	22 3 48.9	.9374739	16 42.6	98 13 35.1	0 36 47.8	.9550
26	7 1 34.27	22 3 50.3	.9366871	16 38.7	98 15 49.9	0 36 42.1	.9550
27	7 1 33.98	22 3 52.5	.9359036	16 34.7	98 18 4.6	0 36 36.4	.9550
28	7 1 33.21	22 3 55.4	.9351237	16 30.8	98 20 19.4	0 36 30.7	.9550
29	7 1 31.95	22 3 59.1	.9343477	16 26.8	98 22 34.2	0 36 25.0	.9550
30	7 1 30.21	22 4 3.5	.9335758	16 22.8	98 24 48.9	0 36 19.4	.9550
31	7 1 27.99	22 4 8.7	.9328083	16 18.9	98 27 3.7	0 36 13.7	.9550
32	7 1 25.28	N. 22 4 14.6	0.9320456	16 14.9	98 29 18.5	S. 0 36 8.0	.9550

SATURN.

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OCTOBER, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	h m s	+ s	s	° ' "	"	"	"
1	6 59 15.58	+ 0.47	0.64	N.22 6 35.2	- 0.6	8.3	0.9
2	6 59 26.64	0.45	0.64	22 6 20.9	0.6	8.3	1.0
3	6 59 37.25	0.43	0.64	22 6 7.1	0.6	8.3	1.0
4	6 59 47.42	0.41	0.64	22 5 53.9	0.5	8.3	1.0
5	6 59 57.13	0.40	0.64	22 5 41.4	0.5	8.3	1.0
6	7 0 6.40	0.38	0.65	22 5 29.4	0.5	8.4	1.0
7	7 0 15.21	0.36	0.65	22 5 18.1	0.5	8.4	1.0
8	7 0 23.57	0.34	0.65	22 5 7.3	0.4	8.4	1.0
9	7 0 31.47	0.32	0.65	22 4 57.3	0.4	8.4	1.0
10	7 0 38.91	0.30	0.65	22 4 47.9	0.4	8.4	1.0
11	7 0 45.90	0.28	0.65	22 4 39.1	0.4	8.4	1.0
12	7 0 52.42	0.26	0.65	22 4 31.0	0.3	8.5	1.0
13	7 0 58.48	0.24	0.65	22 4 23.6	0.3	8.5	1.0
14	7 1 4.07	0.22	0.65	22 4 16.8	0.3	8.5	1.0
15	7 1 9.19	0.20	0.65	22 4 10.8	0.2	8.5	1.0
16	7 1 13.84	0.18	0.65	22 4 5.4	0.2	8.5	1.0
17	7 1 18.02	0.16	0.65	22 4 0.8	0.2	8.5	1.0
18	7 1 21.72	0.14	0.66	22 3 56.8	0.2	8.6	1.0
19	7 1 24.95	0.12	0.66	22 3 53.6	0.1	8.6	1.0
20	7 1 27.70	0.10	0.66	22 3 51.2	0.1	8.6	1.0
21	7 1 29.98	0.08	0.66	22 3 49.4	- 0.1	8.6	1.0
22	7 1 31.77	0.06	0.66	22 3 48.4	0.0	8.6	1.0
23	7 1 33.08	0.04	0.66	22 3 48.1	0.0	8.6	1.0
24	7 1 33.91	+ 0.02	0.67	22 3 48.6	0.0	8.7	1.0
25	7 1 34.25	0.00	0.67	22 3 49.7	+ 0.1	8.7	1.0
26	7 1 34.12	- 0.02	0.67	22 3 51.7	0.1	8.7	1.0
27	7 1 33.50	0.04	0.67	22 3 54.4	0.1	8.7	1.0
28	7 1 32.39	0.06	0.67	22 3 57.8	0.2	8.7	1.0
29	7 1 30.81	0.08	0.67	22 4 2.0	0.2	8.7	1.0
30	7 1 28.74	0.10	0.68	22 4 6.9	0.2	8.8	1.0
31	7 1 26.20	0.12	0.68	22 4 12.6	0.3	8.8	1.0
32	7 1 23.17	- 0.14	0.68	N.22 4 19.1	+ 0.3	8.8	1.0

NOVEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 7 1 25.28	N. 22 4 14.6	.9320456	h m 16 14.9	° ' " 98 29 18.5	S. 0 36 8.0	.9550529
2	7 1 22.09	22 4 21.3	.9312879	16 10.9	98 31 33.2	0 36 2.3	.9550552
3	7 1 18.42	22 4 28.8	.9305355	16 6.9	98 33 48.0	0 35 56.6	.9550575
4	7 1 14.28	22 4 37.0	.9297888	16 2.9	98 36 2.8	0 35 50.9	.9550598
5	7 1 9.66	22 4 45.9	.9290479	15 58.9	98 38 17.6	0 35 45.2	.9550621
6	7 1 4.57	22 4 55.6	.9283133	15 54.9	98 40 32.3	0 35 39.5	.9550644
7	7 0 59.01	22 5 5.9	.9275852	15 50.8	98 42 47.1	0 35 33.9	.9550667
8	7 0 52.98	22 5 17.0	.9268638	15 46.8	98 45 1.9	0 35 28.2	.9550691
9	7 0 46.49	22 5 28.9	.9261494	15 42.7	98 47 16.6	0 35 22.5	.9550714
10	7 0 39.54	22 5 41.4	.9254423	15 38.7	98 49 31.4	0 35 16.8	.9550738
11	7 0 32.13	22 5 54.6	.9247428	15 34.6	98 51 46.2	0 35 11.1	.9550761
12	7 0 24.27	22 6 8.5	.9240510	15 30.6	98 54 0.9	0 35 5.4	.9550785
13	7 0 15.95	22 6 23.1	.9233674	15 26.5	98 56 15.7	0 34 59.7	.9550809
14	7 0 7.19	22 6 38.4	.9226921	15 22.4	98 58 30.5	0 34 54.0	.9550833
15	6 59 57.98	22 6 54.3	.9220254	15 18.3	99 0 45.3	0 34 48.3	.9550857
16	6 59 48.34	22 7 10.9	.9213677	15 14.2	99 3 0.0	0 34 42.6	.9550881
17	6 59 38.25	22 7 28.1	.9207192	15 10.1	99 5 14.8	0 34 36.9	.9550905
18	6 59 27.73	22 7 46.0	.9200801	15 6.0	99 7 29.6	0 34 31.2	.9550929
19	6 59 16.79	22 8 4.5	.9194508	15 1.9	99 9 44.4	0 34 25.5	.9550954
20	6 59 5.42	22 8 23.6	.9188315	14 57.8	99 11 59.2	0 34 19.8	.9550978
21	6 58 53.63	22 8 43.3	.9182226	14 53.6	99 14 13.9	0 34 14.1	.9551002
22	6 58 41.43	22 9 3.6	.9176243	14 49.5	99 16 28.7	0 34 8.4	.9551027
23	6 58 28.82	22 9 24.5	.9170370	14 45.4	99 18 43.5	0 34 2.7	.9551052
24	6 58 15.81	22 9 46.0	.9164609	14 41.2	99 20 58.3	0 33 57.0	.9551077
25	6 58 2.41	22 10 8.0	.9158963	14 37.0	99 23 13.1	0 33 51.3	.9551102
26	6 57 48.61	22 10 30.6	.9153434	14 32.9	99 25 27.9	0 33 45.6	.9551127
27	6 57 34.44	22 10 53.7	.9148026	14 28.7	99 27 42.6	0 33 39.9	.9551152
28	6 57 19.89	22 11 17.3	.9142742	14 24.5	99 29 57.4	0 33 34.2	.9551177
29	6 57 4.98	22 11 41.4	.9137583	14 20.4	99 32 12.2	0 33 28.5	.9551203
30	6 56 49.71	22 12 6.0	.9132553	14 16.2	99 34 27.0	0 33 22.8	.9551228
31	6 56 34.09	N. 22 12 31.1	.9127654	14 12.0	99 36 41.8	S. 0 33 17.1	.9551253

SATURN.

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NOVEMBER, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 7 1 23.17	- 0.14	0.68	N.22 4 19.1	+ 0.3	8.8	1.0
2	7 1 19.67	0.16	0.68	22 4 26.3	0.3	8.8	1.0
3	7 1 15.69	0.18	0.68	22 4 34.2	0.3	8.8	1.0
4	7 1 11.24	0.20	0.68	22 4 42.8	0.4	8.8	1.0
5	7 1 6.32	0.21	0.68	22 4 52.2	0.4	8.9	1.0
6	7 1 0.93	0.23	0.68	22 5 2.3	0.4	8.9	1.0
7	7 0 55.08	0.25	0.68	22 5 13.2	0.5	8.9	1.0
8	7 0 48.77	0.27	0.68	22 5 24.7	0.5	8.9	1.0
9	7 0 41.99	0.29	0.68	22 5 36.9	0.5	8.9	1.0
10	7 0 34.76	0.31	0.68	22 5 49.9	0.6	8.9	1.0
11	7 0 27.08	0.33	0.69	22 6 3.5	0.6	9.0	1.0
12	7 0 18.94	0.35	0.69	22 6 17.8	0.6	9.0	1.0
13	7 0 10.37	0.37	0.69	22 6 32.8	0.6	9.0	1.0
14	7 0 1.34	0.39	0.69	22 6 48.5	0.7	9.0	1.0
15	6 59 51.88	0.40	0.69	22 7 4.8	0.7	9.0	1.0
16	6 59 41.98	0.42	0.69	22 7 21.7	0.7	9.0	1.0
17	6 59 31.65	0.44	0.69	22 7 39.3	0.7	9.0	1.0
18	6 59 20.90	0.46	0.69	22 7 57.5	0.8	9.1	1.0
19	6 59 9.71	0.47	0.69	22 8 16.4	0.8	9.1	1.0
20	6 58 58.12	0.49	0.69	22 8 35.8	0.8	9.1	1.0
21	6 58 46.11	0.51	0.69	22 8 55.8	0.8	9.1	1.0
22	6 58 33.69	0.53	0.69	22 9 16.4	0.9	9.1	1.0
23	6 58 20.87	0.54	0.69	22 9 37.6	0.9	9.1	1.0
24	6 58 7.65	0.56	0.69	22 9 59.4	0.9	9.1	1.0
25	6 57 54.05	0.57	0.70	22 10 21.7	0.9	9.2	1.0
26	6 57 40.07	0.59	0.70	22 10 44.5	1.0	9.2	1.0
27	6 57 25.70	0.60	0.70	22 11 7.9	1.0	9.2	1.0
28	6 57 10.98	0.62	0.70	22 11 31.7	1.0	9.2	1.0
29	6 56 55.90	0.64	0.70	22 11 56.0	1.0	9.2	1.0
30	6 56 40.46	0.65	0.70	22 12 20.8	1.0	9.2	1.0
31	6 56 24.69	- 0.66	0.70	N.22 12 46.0	+ 1.1	9.2	1.0

DECEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Lo Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N.
1	h m s 6 56 34.09	N. 22 12 31.1	0.9127654	h m 14 12.0	° ' " S. 99 36 41.8	° ' " N. 0 33 17.1	0.95
2	6 56 18.13	22 12 56.5	.9122888	14 7.8	99 38 56.5	0 33 11.4	.95
3	6 56 1.84	22 13 22.5	.9118258	14 3.6	99 41 11.3	0 33 5.7	.95
4	6 55 45.23	22 13 48.8	.9113766	13 59.4	99 43 26.1	0 33 0.0	.95
5	6 55 28.31	22 14 15.5	.9109413	13 55.2	99 45 40.9	0 32 54.3	.95
6	6 55 11.09	22 14 42.6	.9105202	13 50.9	99 47 55.6	0 32 48.6	.95
7	6 54 53.57	22 15 10.0	.9101136	13 46.7	99 50 10.4	0 32 42.8	.95
8	6 54 35.77	22 15 37.7	.9097215	13 42.5	99 52 25.2	0 32 37.1	.95
9	6 54 17.69	22 16 5.8	.9093441	13 38.2	99 54 39.9	0 32 31.4	.95
10	6 53 59.35	22 16 34.2	.9089817	13 34.0	99 56 54.7	0 32 25.7	.95
11	6 53 40.76	22 17 2.8	.9086344	13 29.8	99 59 9.5	0 32 20.0	.95
12	6 53 21.92	22 17 31.7	.9083023	13 25.5	100 1 24.3	0 32 14.3	.95
13	6 53 2.84	22 18 0.9	.9079857	13 21.3	100 3 39.0	0 32 8.6	.95
14	6 52 43.54	22 18 30.3	.9076847	13 17.0	100 5 53.8	0 32 2.8	.95
15	6 52 24.03	22 18 59.9	.9073994	13 12.8	100 8 8.6	0 31 57.1	.95
16	6 52 4.31	22 19 29.7	.9071301	13 8.5	100 10 23.3	0 31 51.4	.95
17	6 51 44.40	22 19 59.6	.9068768	13 4.2	100 12 38.1	0 31 45.7	.95
18	6 51 24.31	22 20 29.7	.9066397	13 0.0	100 14 52.9	0 31 40.0	.95
19	6 51 4.05	22 20 59.9	.9064189	12 55.7	100 17 7.6	0 31 34.3	.95
20	6 50 43.63	22 21 30.2	.9062147	12 51.4	100 19 22.4	0 31 28.5	.95
21	6 50 23.05	22 22 0.6	.9060271	12 47.2	100 21 37.1	0 31 22.8	.95
22	6 50 2.34	22 22 31.1	.9058562	12 42.9	100 23 51.9	0 31 17.1	.95
23	6 49 41.51	22 23 1.7	.9057022	12 38.6	100 26 6.6	0 31 11.4	.95
24	6 49 20.56	22 23 32.3	.9055652	12 34.3	100 28 21.4	0 31 5.6	.95
25	6 48 59.51	22 24 3.0	.9054452	12 30.0	100 30 36.1	0 30 59.9	.95
26	6 48 38.37	22 24 33.7	.9053424	12 25.8	100 32 50.9	0 30 54.2	.95
27	6 48 17.16	22 25 4.4	.9052567	12 21.5	100 35 5.6	0 30 48.4	.95
28	6 47 55.89	22 25 35.1	.9051883	12 17.2	100 37 20.3	0 30 42.7	.95
29	6 47 34.57	22 26 5.7	.9051371	12 12.9	100 39 35.1	0 30 37.0	.95
30	6 47 13.22	22 26 36.3	.9051032	12 8.6	100 41 49.8	0 30 31.2	.95
31	6 46 51.86	22 27 6.8	.9050866	12 4.3	100 44 4.6	0 30 25.5	.95
32	6 46 30.48	N. 22 27 37.2	0.9050873	12 0.0	100 46 19.3	S. 0 30 19.8	0.95

SATURN.

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DECEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
^h 6 ^m 56 ^s 24·69	- 0·66	0·70	N.22 12 46·0	+ 1·1	9·2	1·0
6 56 8·58	0·68	0·70	22 13 11·7	1·1	9·2	1·1
6 55 52·15	0·69	0·70	22 13 37·8	1·1	9·2	1·1
6 55 35·41	0·70	0·71	22 14 4·3	1·1	9·3	1·1
6 55 18·36	0·72	0·71	22 14 31·1	1·1	9·3	1·1
6 55 1·02	0·73	0·71	22 14 58·3	1·1	9·3	1·1
6 54 43·39	0·74	0·71	22 15 25·8	1·2	9·3	1·1
6 54 25·48	0·75	0·71	22 15 53·7	1·2	9·3	1·1
6 54 7·31	0·76	0·71	22 16 21·8	1·2	9·3	1·1
6 53 48·88	0·77	0·71	22 16 50·3	1·2	9·3	1·1
6 53 30·20	0·78	0·71	22 17 19·0	1·2	9·3	1·1
6 53 11·28	0·79	0·71	22 17 48·0	1·2	9·3	1·1
6 52 52·13	0·80	0·71	22 18 17·2	1·2	9·3	1·1
6 52 32·77	0·81	0·71	22 18 46·6	1·2	9·3	1·1
6 52 13·20	0·82	0·71	22 19 16·2	1·2	9·3	1·1
6 51 53·44	0·83	0·72	22 19 46·0	1·2	9·4	1·1
6 51 33·48	0·83	0·72	22 20 15·9	1·3	9·4	1·1
6 51 13·36	0·84	0·72	22 20 46·0	1·3	9·4	1·1
6 50 53·07	0·85	0·72	22 21 16·2	1·3	9·4	1·1
6 50 32·63	0·85	0·72	22 21 46·5	1·3	9·4	1·1
6 50 12·04	0·86	0·72	22 22 16·9	1·3	9·4	1·1
6 49 51·33	0·87	0·72	22 22 47·3	1·3	9·4	1·1
6 49 30·49	0·87	0·72	22 23 17·8	1·3	9·4	1·1
6 49 9·54	0·87	0·72	22 23 48·4	1·3	9·4	1·1
6 48 48·51	0·88	0·72	22 24 19·0	1·3	9·4	1·1
6 48 27·39	0·88	0·72	22 24 49·6	1·3	9·4	1·1
6 48 6·21	0·88	0·72	22 25 20·2	1·3	9·4	1·1
6 47 44·98	0·89	0·72	22 25 50·8	1·3	9·4	1·1
6 47 23·71	0·89	0·72	22 26 21·3	1·3	9·4	1·1
6 47 2·42	0·89	0·72	22 26 51·7	1·3	9·4	1·1
6 46 41·11	0·89	0·72	22 27 22·1	1·3	9·4	1·1
6 46 19·80	- 0·89	0·72	N.22 27 52·3	+ 1·3	9·4	1·1

JANUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Ve.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 2 59 3·65	N. 16 39 24·3	1·2786187	h m 8 16·3	° ' " 49 26 21·2	S. 0 18 48·2	1·29221
2	2 58 58·89	16 39 5·6	·2789337	8 12·3	49 27 1·9	0 18 47·7	·29221
3	2 58 54·31	16 38 47·6	·2792527	8 8·3	49 27 42·6	0 18 47·2	·29221
4	2 58 49·93	16 38 30·5	·2795755	8 4·3	49 28 23·3	0 18 46·7	·29221
5	2 58 45·73	16 38 14·2	·2799020	8 0·3	49 29 4·0	0 18 46·2	·29221
6	2 58 41·73	16 37 58·7	·2802321	7 56·3	49 29 44·7	0 18 45·7	·29221
7	2 58 37·92	16 37 44·0	·2805656	7 52·3	49 30 25·3	0 18 45·2	·29221
8	2 58 34·30	16 37 30·1	·2809024	7 48·4	49 31 6·0	0 18 44·7	·29221
9	2 58 30·89	16 37 17·1	·2812425	7 44·4	49 31 46·7	0 18 44·2	·29221
10	2 58 27·67	16 37 5·0	·2815856	7 40·4	49 32 27·4	0 18 43·6	·29221
11	2 58 24·66	16 36 53·7	·2819316	7 36·4	49 33 8·1	0 18 43·1	·29219
12	2 58 21·85	16 36 43·3	·2822805	7 32·4	49 33 48·8	0 18 42·6	·29219
13	2 58 19·24	16 36 33·8	·2826320	7 28·4	49 34 29·4	0 18 42·1	·29219
14	2 58 16·84	16 36 25·2	·2829860	7 24·5	49 35 10·1	0 18 41·6	·29218
15	2 58 14·64	16 36 17·4	·2833425	7 20·5	49 35 50·8	0 18 41·1	·29218
16	2 58 12·65	16 36 10·5	·2837013	7 16·5	49 36 31·5	0 18 40·6	·29218
17	2 58 10·87	16 36 4·5	·2840622	7 12·6	49 37 12·2	0 18 40·1	·29217
18	2 58 9·29	16 35 59·3	·2844252	7 8·6	49 37 52·9	0 18 39·6	·29217
19	2 58 7·93	16 35 55·0	·2847901	7 4·7	49 38 33·5	0 18 39·1	·29217
20	2 58 6·77	16 35 51·6	·2851568	7 0·7	49 39 14·2	0 18 38·6	·29216
21	2 58 5·82	16 35 49·1	·2855251	6 56·8	49 39 54·9	0 18 38·1	·29216
22	2 58 5·08	16 35 47·5	·2858950	6 52·8	49 40 35·6	0 18 37·6	·29215
23	2 58 4·55	16 35 46·8	·2862664	6 48·9	49 41 16·3	0 18 37·1	·29215
24	2 58 4·22	16 35 47·0	·2866392	6 44·9	49 41 56·9	0 18 36·6	·29215
25	2 58 4·10	16 35 48·1	·2870132	6 41·0	49 42 37·6	0 18 36·1	·29214
26	2 58 4·20	16 35 50·0	·2873883	6 37·1	49 43 18·3	0 18 35·6	·29214
27	2 58 4·51	16 35 52·9	·2877644	6 33·2	49 43 59·0	0 18 35·1	·29214
28	2 58 5·03	16 35 56·7	·2881413	6 29·2	49 44 39·6	0 18 34·6	·29215
29	2 58 5·76	16 36 1·4	·2885190	6 25·3	49 45 20·3	0 18 34·1	·29215
30	2 58 6·71	16 36 6·9	·2888974	6 21·4	49 46 1·0	0 18 33·6	·29215
31	2 58 7·87	16 36 13·4	·2892763	6 17·5	49 46 41·7	0 18 33·1	·29212
32	2 58 9·24	N. 16 36 20·8	1·2896556	6 13·6	49 47 22·3	S. 0 18 32·6	1·29212

URANUS.

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JANUARY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
2 59 1 ^o 98	- 0 ^o 20	0 ^o 14	N.16 39 17 ^o 8	- 0 ^o 8	2 ^o 0	0 ^o 5
2 58 57 ^o 30	0 ^o 19	0 ^o 14	16 38 59 ^o 4	0 ^o 8	2 ^o 0	0 ^o 5
2 58 52 ^o 80	0 ^o 18	0 ^o 14	16 38 41 ^o 7	0 ^o 7	2 ^o 0	0 ^o 5
2 58 48 ^o 50	0 ^o 18	0 ^o 14	16 38 24 ^o 9	0 ^o 7	2 ^o 0	0 ^o 5
2 58 44 ^o 38	0 ^o 17	0 ^o 14	16 38 8 ^o 9	0 ^o 7	2 ^o 0	0 ^o 5
2 58 40 ^o 45	0 ^o 16	0 ^o 14	16 37 53 ^o 7	0 ^o 6	2 ^o 0	0 ^o 4
2 58 36 ^o 71	0 ^o 15	0 ^o 14	16 37 39 ^o 3	0 ^o 6	2 ^o 0	0 ^o 4
2 58 33 ^o 17	0 ^o 14	0 ^o 14	16 37 25 ^o 8	0 ^o 5	2 ^o 0	0 ^o 4
2 58 29 ^o 83	0 ^o 14	0 ^o 13	16 37 13 ^o 1	0 ^o 5	1 ^o 9	0 ^o 4
2 58 26 ^o 69	0 ^o 13	0 ^o 13	16 37 1 ^o 3	0 ^o 5	1 ^o 9	0 ^o 4
2 58 23 ^o 75	0 ^o 12	0 ^o 13	16 36 50 ^o 3	0 ^o 4	1 ^o 9	0 ^o 4
2 58 21 ^o 01	0 ^o 11	0 ^o 13	16 36 40 ^o 2	0 ^o 4	1 ^o 9	0 ^o 4
2 58 18 ^o 47	0 ^o 10	0 ^o 13	16 36 31 ^o 0	0 ^o 4	1 ^o 9	0 ^o 4
2 58 16 ^o 14	0 ^o 09	0 ^o 13	16 36 22 ^o 7	0 ^o 3	1 ^o 9	0 ^o 4
2 58 14 ^o 01	0 ^o 08	0 ^o 13	16 36 15 ^o 2	0 ^o 3	1 ^o 9	0 ^o 4
2 58 12 ^o 09	0 ^o 08	0 ^o 13	16 36 8 ^o 6	0 ^o 3	1 ^o 9	0 ^o 4
2 58 10 ^o 37	0 ^o 07	0 ^o 13	16 36 2 ^o 8	0 ^o 2	1 ^o 9	0 ^o 4
2 58 8 ^o 86	0 ^o 06	0 ^o 13	16 35 57 ^o 9	0 ^o 2	1 ^o 9	0 ^o 4
2 58 7 ^o 56	0 ^o 05	0 ^o 13	16 35 53 ^o 9	0 ^o 1	1 ^o 9	0 ^o 4
2 58 6 ^o 47	0 ^o 04	0 ^o 13	16 35 50 ^o 8	0 ^o 1	1 ^o 9	0 ^o 4
2 58 5 ^o 59	0 ^o 03	0 ^o 13	16 35 48 ^o 6	- 0 ^o 1	1 ^o 9	0 ^o 4
2 58 4 ^o 91	0 ^o 02	0 ^o 13	16 35 47 ^o 2	0 ^o 0	1 ^o 9	0 ^o 4
2 58 4 ^o 43	0 ^o 02	0 ^o 13	16 35 46 ^o 8	0 ^o 0	1 ^o 9	0 ^o 4
2 58 4 ^o 17	- 0 ^o 01	0 ^o 13	16 35 47 ^o 2	0 ^o 0	1 ^o 9	0 ^o 4
2 58 4 ^o 11	0 ^o 00	0 ^o 13	16 35 48 ^o 5	+ 0 ^o 1	1 ^o 9	0 ^o 4
2 58 4 ^o 26	+ 0 ^o 01	0 ^o 13	16 35 50 ^o 7	0 ^o 1	1 ^o 9	0 ^o 4
2 58 4 ^o 63	0 ^o 02	0 ^o 13	16 35 53 ^o 9	0 ^o 2	1 ^o 9	0 ^o 4
2 58 5 ^o 21	0 ^o 03	0 ^o 13	16 35 57 ^o 9	0 ^o 2	1 ^o 9	0 ^o 4
2 58 6 ^o 00	0 ^o 04	0 ^o 13	16 36 2 ^o 8	0 ^o 2	1 ^o 9	0 ^o 4
2 58 7 ^o 00	0 ^o 05	0 ^o 13	16 36 8 ^o 6	0 ^o 3	1 ^o 9	0 ^o 4
2 58 8 ^o 21	0 ^o 05	0 ^o 13	16 36 15 ^o 3	0 ^o 3	1 ^o 9	0 ^o 4
2 58 9 ^o 63	+ 0 ^o 06	0 ^o 13	N.16 36 22 ^o 9	+ 0 ^o 3	1 ^o 9	0 ^o 4

URANUS.

FEBRUARY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 2 58 9.24	N. 16 36 20.8	.2896556	h m 6 13.6	° ' " 49 47 22.3	S. 0 18 32.6	.2921245
2	2 58 10.82	16 36 29.1	.2900352	6 9.7	49 48 3.0	0 18 32.1	.2921310
3	2 58 12.62	16 36 38.3	.2904149	6 5.8	49 48 43.7	0 18 31.6	.2921175
4	2 58 14.63	16 36 48.4	.2907947	6 1.9	49 49 24.4	0 18 31.1	.2921140
5	2 58 16.84	16 36 59.4	.2911743	5 58.0	49 50 5.0	0 18 30.6	.2921105
6	2 58 19.27	16 37 11.3	.2915538	5 54.1	49 50 45.7	0 18 30.1	.2921070
7	2 58 21.91	16 37 24.1	.2919330	5 50.2	49 51 26.4	0 18 29.6	.2921035
8	2 58 24.75	16 37 37.8	.2923117	5 46.3	49 52 7.0	0 18 29.1	.2921000
9	2 58 27.81	16 37 52.4	.2926898	5 42.5	49 52 47.7	0 18 28.5	.2920965
10	2 58 31.08	16 38 7.8	.2930672	5 38.6	49 53 28.4	0 18 28.0	.2920930
11	2 58 34.55	16 38 24.1	.2934438	5 34.7	49 54 9.0	0 18 27.5	.2920895
12	2 58 38.23	16 38 41.3	.2938195	5 30.8	49 54 49.7	0 18 27.0	.2920860
13	2 58 42.12	16 38 59.3	.2941942	5 27.0	49 55 30.4	0 18 26.5	.2920825
14	2 58 46.21	16 39 18.2	.2945677	5 23.1	49 56 11.0	0 18 26.0	.2920790
15	2 58 50.50	16 39 37.9	.2949399	5 19.2	49 56 51.7	0 18 25.5	.2920755
16	2 58 54.99	16 39 58.5	.2953108	5 15.4	49 57 32.4	0 18 25.0	.2920720
17	2 58 59.68	16 40 19.9	.2956802	5 11.5	49 58 13.0	0 18 24.5	.2920685
18	2 59 4.57	16 40 42.1	.2960481	5 7.7	49 58 53.7	0 18 24.0	.2920649
19	2 59 9.65	16 41 5.1	.2964143	5 3.8	49 59 34.4	0 18 23.5	.2920614
20	2 59 14.93	16 41 29.0	.2967787	5 0.0	50 0 15.0	0 18 23.0	.2920579
21	2 59 20.41	16 41 53.6	.2971413	4 56.1	50 0 55.7	0 18 22.5	.2920544
22	2 59 26.08	16 42 19.0	.2975020	4 52.3	50 1 36.4	0 18 22.0	.2920509
23	2 59 31.94	16 42 45.3	.2978606	4 48.5	50 2 17.0	0 18 21.5	.2920474
24	2 59 37.99	16 43 12.3	.2982171	4 44.6	50 2 57.7	0 18 21.0	.2920439
25	2 59 44.23	16 43 40.1	.2985714	4 40.8	50 3 38.3	0 18 20.5	.2920404
26	2 59 50.66	16 44 8.7	.2989234	4 37.0	50 4 19.0	0 18 20.0	.2920369
27	2 59 57.28	16 44 38.0	.2992730	4 33.2	50 4 59.6	0 18 19.5	.2920333
28	3 0 4.08	16 45 8.1	.2996201	4 29.3	50 5 40.3	0 18 19.0	.2920298
29	3 0 11.07	16 45 39.0	.2999647	4 25.5	50 6 21.0	0 18 18.5	.2920263
30	3 0 18.24	N. 16 46 10.6	.3003066	4 21.7	50 7 1.6	S. 0 18 17.9	.2920228

FEBRUARY, 1856.

At Transit over the Meridian of Greenwich.

<i>Apparent Right Ascension.</i>	<i>Variation of Right Asc. in 1 Hour of Long.</i>	<i>Sid. Time of Sem. pass. Mer.</i>	<i>Apparent Declination.</i>	<i>Variation of Declination in 1 Hour of Long.</i>	<i>Semi- diameter.</i>	<i>Hor. Par.</i>
h m s	+ s	s	° ' "	+ "	"	"
2 58 9.63	+ 0.06	0.13	N.16 36 22.9	+ 0.3	1.9	0.4
2 58 11.26	0.07	0.13	16 36 31.4	0.4	1.9	0.4
2 58 13.11	0.08	0.13	16 36 40.8	0.4	1.9	0.4
2 58 15.17	0.09	0.13	16 36 51.1	0.4	1.9	0.4
2 58 17.43	0.10	0.13	16 37 2.3	0.5	1.9	0.4
2 58 19.90	0.11	0.13	16 37 14.4	0.5	1.9	0.4
2 58 22.58	0.12	0.13	16 37 27.4	0.6	1.9	0.4
2 58 25.47	0.12	0.13	16 37 41.2	0.6	1.9	0.4
2 58 28.57	0.13	0.13	16 37 56.0	0.6	1.9	0.4
2 58 31.88	0.14	0.13	16 38 11.6	0.7	1.9	0.4
2 58 35.39	0.15	0.13	16 38 28.0	0.7	1.9	0.4
2 58 39.11	0.16	0.13	16 38 45.3	0.7	1.9	0.4
2 58 43.03	0.17	0.13	16 39 3.5	0.8	1.9	0.4
2 58 47.15	0.18	0.13	16 39 22.5	0.8	1.9	0.4
2 58 51.48	0.18	0.13	16 39 42.4	0.8	1.9	0.4
2 58 56.00	0.19	0.13	16 40 3.1	0.9	1.9	0.4
2 59 0.72	0.20	0.13	16 40 24.6	0.9	1.9	0.4
2 59 5.64	0.21	0.13	16 40 46.9	0.9	1.9	0.4
2 59 10.75	0.22	0.13	16 41 10.0	1.0	1.9	0.4
2 59 16.06	0.23	0.13	16 41 34.0	1.0	1.9	0.4
2 59 21.56	0.23	0.13	16 41 58.8	1.0	1.9	0.4
2 59 27.26	0.24	0.13	16 42 24.3	1.1	1.9	0.4
2 59 33.14	0.25	0.13	16 42 50.6	1.1	1.9	0.4
2 59 39.21	0.26	0.13	16 43 17.7	1.1	1.9	0.4
2 59 45.47	0.26	0.13	16 43 45.6	1.2	1.9	0.4
2 59 51.92	0.27	0.13	16 44 14.2	1.2	1.9	0.4
2 59 58.56	0.28	0.13	16 44 43.6	1.2	1.9	0.4
3 0 5.38	0.29	0.13	16 45 13.8	1.3	1.9	0.4
3 0 12.38	0.30	0.13	16 45 44.7	1.3	1.9	0.4
3 0 19.56	+ 0.30	0.13	N.16 46 16.4	+ 1.3	1.9	0.4

MARCH, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	h m s 3 0 18.24	N. 16 46 10.6	1.3003066	h m 4 21.7	° ' " 50 7 1.6	S. 0 18 17.9	1.292
2	3 0 25.59	16 46 42.9	*3006457	4 17.9	50 7 42.3	0 18 17.4	.292
3	3 0 33.12	16 47 15.9	*3009820	4 14.1	50 8 22.9	0 18 16.9	.292
4	3 0 40.82	16 47 49.7	*3013153	4 10.3	50 9 3.6	0 18 16.4	.292
5	3 0 48.70	16 48 24.2	*3016455	4 6.5	50 9 44.3	0 18 15.9	.292
6	3 0 56.75	16 48 59.3	*3019726	4 2.7	50 10 24.9	0 18 15.4	.292
7	3 1 4.98	16 49 35.2	*3022964	3 58.9	50 11 5.6	0 18 14.9	.292
8	3 1 13.37	16 50 11.7	*3026169	3 55.1	50 11 46.2	0 18 14.4	.292
9	3 1 21.93	16 50 48.9	*3029340	3 51.3	50 12 26.9	0 18 13.9	.292
10	3 1 30.65	16 51 26.7	*3032476	3 47.5	50 13 7.6	0 18 13.4	.292
11	3 1 39.54	16 52 5.2	*3035577	3 43.8	50 13 48.2	0 18 12.9	.292
12	3 1 48.59	16 52 44.3	*3038642	3 40.0	50 14 28.9	0 18 12.4	.292
13	3 1 57.79	16 53 24.0	*3041670	3 36.2	50 15 9.5	0 18 11.9	.292
14	3 2 7.15	16 54 4.4	*3044660	3 32.4	50 15 50.2	0 18 11.4	.292
15	3 2 16.67	16 54 45.3	*3047612	3 28.6	50 16 30.9	0 18 10.9	.292
16	3 2 26.33	16 55 26.8	*3050524	3 24.9	50 17 11.5	0 18 10.3	.292
17	3 2 36.14	16 56 8.9	*3053397	3 21.1	50 17 52.2	0 18 9.8	.292
18	3 2 46.10	16 56 51.5	*3056229	3 17.3	50 18 32.9	0 18 9.3	.292
19	3 2 56.20	16 57 34.6	*3059020	3 13.6	50 19 13.5	0 18 8.8	.292
20	3 3 6.45	16 58 18.3	*3061770	3 9.8	50 19 54.2	0 18 8.3	.292
21	3 3 16.83	16 59 2.6	*3064477	3 6.0	50 20 34.8	0 18 7.8	.292
22	3 3 27.35	16 59 47.3	*3067142	3 2.3	50 21 15.5	0 18 7.3	.292
23	3 3 38.01	17 0 32.6	*3069764	2 58.5	50 21 56.2	0 18 6.8	.292
24	3 3 48.80	17 1 18.3	*3072343	2 54.8	50 22 36.8	0 18 6.3	.292
25	3 3 59.71	17 2 4.6	*3074878	2 51.0	50 23 17.5	0 18 5.8	.292
26	3 4 10.76	17 2 51.3	*3077368	2 47.3	50 23 58.2	0 18 5.3	.292
27	3 4 21.93	17 3 38.5	*3079813	2 43.5	50 24 38.8	0 18 4.8	.292
28	3 4 33.23	17 4 26.1	*3082212	2 39.8	50 25 19.5	0 18 4.3	.292
29	3 4 44.65	17 5 14.2	*3084564	2 36.0	50 26 0.2	0 18 3.8	.292
30	3 4 56.18	17 6 2.6	*3086869	2 32.3	50 26 40.8	0 18 3.3	.292
31	3 5 7.83	17 6 51.5	*3089127	2 28.6	50 27 21.5	0 18 2.7	.292
32	3 5 19.60	N. 17 7 40.8	1.3091336	2 24.8	50 28 2.2	S. 0 18 2.2	1.292

MARCH, 1856.

At Transit over the Meridian of Greenwich.

Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 3 0 19.56	+ s 0.30	s 0.13	o ' " N.16 46 16.4	+ " 1.3	" 1.9	" 0.4
2	3 0 26.92	0.31	0.13	16 46 48.8	1.4	1.9	0.4
3	3 0 34.46	0.32	0.13	16 47 21.9	1.4	1.9	0.4
4	3 0 42.18	0.33	0.13	16 47 55.7	1.4	1.9	0.4
5	3 0 50.07	0.33	0.13	16 48 30.1	1.5	1.9	0.4
6	3 0 58.13	0.34	0.13	16 49 5.3	1.5	1.9	0.4
7	3 1 6.36	0.35	0.13	16 49 41.2	1.5	1.9	0.4
8	3 1 14.76	0.35	0.13	16 50 17.7	1.5	1.9	0.4
9	3 1 23.32	0.36	0.13	16 50 54.9	1.6	1.9	0.4
0	3 1 32.04	0.37	0.13	16 51 32.7	1.6	1.9	0.4
1	3 1 40.93	0.37	0.13	16 52 11.2	1.6	1.9	0.4
2	3 1 49.98	0.38	0.13	16 52 50.3	1.6	1.9	0.4
3	3 1 59.19	0.39	0.12	16 53 30.0	1.7	1.8	0.4
4	3 2 8.55	0.39	0.12	16 54 10.4	1.7	1.8	0.4
5	3 2 18.06	0.40	0.12	16 54 51.3	1.7	1.8	0.4
6	3 2 27.72	0.41	0.12	16 55 32.8	1.7	1.8	0.4
7	3 2 37.53	0.41	0.12	16 56 14.8	1.8	1.8	0.4
8	3 2 47.48	0.42	0.12	16 56 57.4	1.8	1.8	0.4
9	3 2 57.57	0.42	0.12	16 57 40.5	1.8	1.8	0.4
0	3 3 7.81	0.43	0.12	16 58 24.1	1.8	1.8	0.4
1	3 3 18.18	0.44	0.12	16 59 8.3	1.9	1.8	0.4
2	3 3 28.69	0.44	0.12	16 59 53.0	1.9	1.8	0.4
3	3 3 39.34	0.45	0.12	17 0 38.2	1.9	1.8	0.4
4	3 3 50.12	0.45	0.12	17 1 23.9	1.9	1.8	0.4
5	3 4 1.02	0.46	0.12	17 2 10.1	1.9	1.8	0.4
6	3 4 12.05	0.46	0.12	17 2 56.7	2.0	1.8	0.4
7	3 4 23.21	0.47	0.12	17 3 43.8	2.0	1.8	0.4
8	3 4 34.49	0.47	0.12	17 4 31.4	2.0	1.8	0.4
9	3 4 45.89	0.48	0.12	17 5 19.4	2.0	1.8	0.4
0	3 4 57.41	0.48	0.12	17 6 7.8	2.0	1.8	0.4
1	3 5 9.04	0.49	0.12	17 6 56.6	2.0	1.8	0.4
2	3 5 20.79	+ 0.49	0.12	N.17 7 45.8	+ 2.1	1.8	

URANUS.

APRIL, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Loq Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	h m s 3 5 19.60	N. 17 7 40.8	1.3091336	h m 2 24.8	° ' " 50 28 2.2	S. 0 18' 2.2	1.291
2	3 5 31.48	17 8 30.5	1.3093497	2 21.1	50 28 42.8	0 18 1.7	1.291
3	3 5 43.46	17 9 20.6	1.3095608	2 17.4	50 29 23.5	0 18 1.2	1.291
4	3 5 55.55	17 10 11.1	1.3097670	2 13.6	50 30 4.2	0 18 0.7	1.291
5	3 6 7.75	17 11 1.9	1.3099682	2 9.9	50 30 44.9	0 18 0.2	1.291
6	3 6 20.04	17 11 53.1	1.3101643	2 6.2	50 31 25.6	0 17 59.7	1.291
7	3 6 32.44	17 12 44.6	1.3103554	2 2.5	50 32 6.2	0 17 59.2	1.291
8	3 6 44.93	17 13 36.4	1.3105413	1 58.7	50 32 46.9	0 17 58.7	1.291
9	3 6 57.51	17 14 28.5	1.3107220	1 55.0	50 33 27.6	0 17 58.2	1.291
10	3 7 10.18	17 15 20.9	1.3108975	1 51.3	50 34 8.3	0 17 57.7	1.291
11	3 7 22.94	17 16 13.6	1.3110678	1 47.6	50 34 49.0	0 17 57.2	1.291
12	3 7 35.79	17 17 6.5	1.3112327	1 43.9	50 35 29.7	0 17 56.7	1.291
13	3 7 48.72	17 17 59.7	1.3113924	1 40.1	50 36 10.4	0 17 56.2	1.291
14	3 8 1.72	17 18 53.1	1.3115467	1 36.4	50 36 51.0	0 17 55.7	1.291
15	3 8 14.80	17 19 46.8	1.3116957	1 32.7	50 37 31.7	0 17 55.1	1.291
16	3 8 27.95	17 20 40.7	1.3118394	1 29.0	50 38 12.4	0 17 54.6	1.291
17	3 8 41.17	17 21 34.7	1.3119776	1 25.3	50 38 53.1	0 17 54.1	1.291
18	3 8 54.46	17 22 29.0	1.3121105	1 21.6	50 39 33.8	0 17 53.6	1.291
19	3 9 7.82	17 23 23.5	1.3122380	1 17.9	50 40 14.5	0 17 53.1	1.291
20	3 9 21.23	17 24 18.1	1.3123600	1 14.1	50 40 55.2	0 17 52.6	1.291
21	3 9 34.71	17 25 12.9	1.3124765	1 10.4	50 41 35.9	0 17 52.1	1.291
22	3 9 48.24	17 26 7.9	1.3125876	1 6.7	50 42 16.6	0 17 51.6	1.291
23	3 10 1.83	17 27 3.0	1.3126932	1 3.0	50 42 57.3	0 17 51.1	1.291
24	3 10 15.48	17 27 58.2	1.3127933	0 59.3	50 43 38.1	0 17 50.6	1.291
25	3 10 29.17	17 28 53.5	1.3128878	0 55.6	50 44 18.8	0 17 50.1	1.291
26	3 10 42.91	17 29 49.0	1.3129768	0 51.9	50 44 59.5	0 17 49.6	1.291
27	3 10 56.69	17 30 44.5	1.3130602	0 48.2	50 45 40.2	0 17 49.0	1.291
28	3 11 10.52	17 31 40.1	1.3131380	0 44.5	50 46 21.0	0 17 48.5	1.291
29	3 11 24.39	17 32 35.8	1.3132101	0 40.8	50 47 1.7	0 17 48.0	1.291
30	3 11 38.30	17 33 31.6	1.3132766	0 37.1	50 47 42.4	0 17 47.5	1.291
31	3 11 52.24	N. 17 34 27.4	1.3133375	0 33.4	50 48 23.1	S. 0 17 47.0	1.291

APRIL, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
3 5 20.79	+ 0.49	0.12	N.17 7 45.8	+ 2.1	1.8	0.4
3 5 32.64	0.50	0.12	17 8 35.4	2.1	1.8	0.4
3 5 44.61	0.50	0.12	17 9 25.4	2.1	1.8	0.4
3 5 56.68	0.51	0.12	17 10 15.8	2.1	1.8	0.4
3 6 8.85	0.51	0.12	17 11 6.5	2.1	1.8	0.4
3 6 21.12	0.51	0.12	17 11 57.6	2.1	1.8	0.4
3 6 33.49	0.52	0.12	17 12 49.0	2.1	1.8	0.4
3 6 45.96	0.52	0.12	17 13 40.7	2.2	1.8	0.4
3 6 58.52	0.53	0.12	17 14 32.7	2.2	1.8	0.4
3 7 11.17	0.53	0.12	17 15 25.0	2.2	1.8	0.4
3 7 23.90	0.53	0.12	17 16 17.5	2.2	1.8	0.4
3 7 36.72	0.54	0.12	17 17 10.3	2.2	1.8	0.4
3 7 49.62	0.54	0.12	17 18 3.4	2.2	1.8	0.4
3 8 2.59	0.54	0.12	17 18 56.7	2.2	1.8	0.4
3 8 15.64	0.55	0.12	17 19 50.3	2.2	1.8	0.4
3 8 28.77	0.55	0.12	17 20 44.0	2.2	1.8	0.4
3 8 41.96	0.55	0.12	17 21 38.0	2.3	1.8	0.4
3 8 55.22	0.55	0.12	17 22 32.1	2.3	1.8	0.4
3 9 8.54	0.56	0.12	17 23 26.4	2.3	1.8	0.4
3 9 21.93	0.56	0.12	17 24 20.9	2.3	1.8	0.4
3 9 35.37	0.56	0.12	17 25 15.6	2.3	1.8	0.4
3 9 48.87	0.56	0.12	17 26 10.4	2.3	1.8	0.4
3 10 2.43	0.57	0.12	17 27 5.4	2.3	1.8	0.4
3 10 16.04	0.57	0.12	17 28 0.4	2.3	1.8	0.4
3 10 29.70	0.57	0.12	17 28 55.6	2.3	1.8	0.4
3 10 43.40	0.57	0.12	17 29 50.9	2.3	1.8	0.4
3 10 57.15	0.57	0.12	17 30 46.3	2.3	1.8	0.4
3 11 10.94	0.58	0.12	17 31 41.8			0.4
3 11 24.78	0.58	0.12	17 32 37.4			
3 11 38.65	0.58	0.12	17 33 33.0			
3 11 52.56	+ 0.58	0.12	N.17 34 28.7			

URANUS.

MAY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Le Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N
1	h m s 3 11 52.24	° ' " N. 17 34 27.4	.3133375	h m 0 33.4	° ' " 50 48 23.1	° ' " S. 0 17 47.0	1.29
2	3 12 6.21	17 35 23.2	.3133926	0 29.7	50 49 3.9	0 17 46.5	.29
3	3 12 20.21	17 36 19.1	.3134421	0 26.0	50 49 44.6	0 17 46.0	.29
4	3 12 34.23	17 37 15.0	.3134859	0 22.3	50 50 25.4	0 17 45.5	.29
5	3 12 48.28	17 38 10.9	.3135240	0 18.6	50 51 6.1	0 17 45.0	.29
6	3 13 2.35	17 39 6.8	.3135565	0 14.9	50 51 46.9	0 17 44.5	.29
7	3 13 16.43	17 40 2.7	.3135832	0 11.2	50 52 27.6	0 17 43.9	.29
8	3 13 30.53	17 40 58.5	.3136042	0 7.5	50 53 8.3	0 17 43.4	.29
9	3 13 44.63	17 41 54.3	.3136195	0 3.8	50 53 49.1	0 17 42.9	.29
10	3 13 58.74	17 42 50.0	.3136291	{ 0 0.1 } 23 28.4	50 54 29.8	0 17 42.4	.29
11	3 14 12.86	17 43 45.6	.3136329	23 52.7	50 55 10.6	0 17 41.9	.29
12	3 14 26.97	17 44 41.2	.3136311	23 49.0	50 55 51.3	0 17 41.4	.29
13	3 14 41.09	17 45 36.6	.3136236	23 45.3	50 56 32.1	0 17 40.9	.29
14	3 14 55.20	17 46 32.0	.3136104	23 41.6	50 57 12.9	0 17 40.4	.29
15	3 15 9.31	17 47 27.2	.3135915	23 37.9	50 57 53.6	0 17 39.9	.29
16	3 15 23.41	17 48 22.3	.3135671	23 34.2	50 58 34.4	0 17 39.4	.29
17	3 15 37.50	17 49 17.3	.3135370	23 30.5	50 59 15.1	0 17 38.8	.29
18	3 15 51.57	17 50 12.2	.3135013	23 26.8	50 59 55.9	0 17 38.3	.29
19	3 16 5.63	17 51 7.0	.3134600	23 23.1	51 0 36.7	0 17 37.8	.29
20	3 16 19.67	17 52 1.6	.3134132	23 19.4	51 1 17.4	0 17 37.3	.29
21	3 16 33.69	17 52 56.0	.3133607	23 15.7	51 1 58.2	0 17 36.8	.29
22	3 16 47.69	17 53 50.3	.3133026	23 12.0	51 2 39.0	0 17 36.3	.29
23	3 17 1.66	17 54 44.3	.3132390	23 8.3	51 3 19.8	0 17 35.8	.29
24	3 17 15.60	17 55 38.2	.3131698	23 4.6	51 4 0.6	0 17 35.3	.29
25	3 17 29.51	17 56 31.8	.3130951	23 0.9	51 4 41.3	0 17 34.8	.29
26	3 17 43.39	17 57 25.3	.3130149	22 57.2	51 5 22.1	0 17 34.3	.29
27	3 17 57.23	17 58 18.5	.3129291	22 53.5	51 6 2.9	0 17 33.7	.29
28	3 18 11.03	17 59 11.5	.3128378	22 49.8	51 6 43.7	0 17 33.2	.29
29	3 18 24.79	18 0 4.2	.3127410	22 46.1	51 7 24.5	0 17 32.7	.29
30	3 18 38.50	18 0 56.6	.3126388	22 42.4	51 8 5.3	0 17 32.2	.29
31	3 18 52.17	18 1 48.8	.3125311	22 38.7	51 8 46.0	0 17 31.7	.29
32	3 19 5.78	N. 18 2 40.8	.3124180	22 35.0	51 9 26.8	S. 0 17 31.2	1.29

URANUS.

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MAY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	+	s	° ' "	+	"	"
3 11 52.56	0.58	0.12	N.17 34 28.7	2.3	1.8	0.4
3 12 6.50	0.58	0.12	17 35 24.4	2.3	1.8	0.4
3 12 20.46	0.58	0.12	17 36 20.1	2.3	1.8	0.4
3 12 34.45	0.58	0.12	17 37 15.9	2.3	1.8	0.4
3 12 48.46	0.58	0.12	17 38 11.6	2.3	1.8	0.4
3 13 2.49	0.59	0.12	17 39 7.4	2.3	1.8	0.4
3 13 16.54	0.59	0.12	17 40 3.1	2.3	1.8	0.4
3 13 30.60	0.59	0.12	17 40 58.8	2.3	1.8	0.4
3 13 44.67	0.59	0.12	17 41 54.5	2.3	1.8	0.4
3 13 58.74	0.59	0.12	17 42 50.0	2.3	1.8	0.4
{ 3 14 12.82 } { 3 14 26.90 }	{ 0.59 } { 0.59 }	{ 0.12 } { 0.12 }	{ 17 43 45.5 } { 17 44 40.9 }	{ 2.3 } { 2.3 }	{ 1.8 } { 1.8 }	{ 0.4 } { 0.4 }
3 14 40.98	0.59	0.12	17 45 36.2	2.3	1.8	0.4
3 14 55.06	0.59	0.12	17 46 31.4	2.3	1.8	0.4
3 15 9.13	0.59	0.12	17 47 26.5	2.3	1.8	0.4
3 15 23.19	0.59	0.12	17 48 21.5	2.3	1.8	0.4
3 15 37.24	0.59	0.12	17 49 16.4	2.3	1.8	0.4
3 15 51.28	0.58	0.12	17 50 11.1	2.3	1.8	0.4
3 16 5.31	0.58	0.12	17 51 5.7	2.3	1.8	0.4
3 16 19.31	0.58	0.12	17 52 0.2	2.3	1.8	0.4
3 16 33.30	0.58	0.12	17 52 54.5	2.3	1.8	0.4
3 16 47.26	0.58	0.12	17 53 48.6	2.3	1.8	0.4
3 17 1.19	0.58	0.12	17 54 42.5	2.2	1.8	0.4
3 17 15.10	0.58	0.12	17 55 36.3	2.2	1.8	0.4
3 17 28.98	0.58	0.12	17 56 29.8	2.2	1.8	0.4
3 17 42.82	0.58	0.12	17 57 23.1	2.2	1.8	0.4
3 17 56.63	0.57	0.12	17 58 16.2	2.2	1.8	0.4
3 18 10.39	0.57	0.12	17 59 9.0	2.2	1.8	0.4
3 18 24.12	0.57	0.12	18 0 1.6	2.2	1.8	0.4
3 18 37.80	0.57	0.12	18 0 54.0	2.2	1.8	0.4
3 18 51.43	0.57	0.12	18 1 46.0	2.2	1.8	0.4
3 19 5.01	0.56	0.12	18 2 37.8	2.2	1.8	0.4
3 19 18.54	+ 0.56	0.12	N.18 3 29.4	+ 2.1		

JUNE, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	No.
1	h m s 3 19 5 ⁷ .8	N. 18 2 40 ⁸ .8	1 ³ 124180	22 35 ⁰ .0	51 9 26 ⁸ .8	S. 0 17 31 ² .2	1 ²⁹ 1
2	3 19 19 ³ .4	18 3 32 ⁴ .4	*3122994	22 31 ³ .3	51 10 7 ⁶ .6	0 17 30 ⁷ .7	*291
3	3 19 32 ⁸ .4	18 4 23 ⁸ .8	*3121755	22 27 ⁶ .6	51 10 48 ⁴ .4	0 17 30 ² .2	*291
4	3 19 46 ² .9	18 5 14 ⁸ .8	*3120462	22 23 ⁸ .8	51 11 29 ² .2	0 17 29 ⁷ .7	*291
5	3 19 59 ⁶ .7	18 6 5 ⁶ .6	*3119116	22 20 ¹ .1	51 12 10 ⁰ .0	0 17 29 ² .2	*291
6	3 20 12 ⁹ .9	18 6 56 ⁰ .0	*3117717	22 16 ⁴ .4	51 12 50 ⁸ .8	0 17 28 ⁶ .6	*291
7	3 20 26 ² .4	18 7 46 ¹ .1	*3116265	22 12 ⁷ .7	51 13 31 ⁶ .6	0 17 28 ¹ .1	*291
8	3 20 39 ⁴ .2	18 8 35 ⁸ .8	*3114761	22 9 ⁰ .0	51 14 12 ⁴ .4	0 17 27 ⁶ .6	*291
9	3 20 52 ⁵ .3	18 9 25 ² .2	*3113205	22 5 ³ .3	51 14 53 ² .2	0 17 27 ¹ .1	*291
10	3 21 5 ⁵ .6	18 10 14 ² .2	*3111597	22 1 ⁶ .6	51 15 34 ⁰ .0	0 17 26 ⁶ .6	*291
11	3 21 18 ⁵ .2	18 11 2 ⁸ .8	*3109938	21 57 ⁸ .8	51 16 14 ⁸ .8	0 17 26 ¹ .1	*291
12	3 21 31 ³ .9	18 11 51 ¹ .1	*3108228	21 54 ¹ .1	51 16 55 ⁶ .6	0 17 25 ⁶ .6	*291
13	3 21 44 ¹ .8	18 12 39 ⁰ .0	*3106468	21 50 ⁴ .4	51 17 36 ⁴ .4	0 17 25 ¹ .1	*291
14	3 21 56 ⁸ .9	18 13 26 ⁵ .5	*3104657	21 46 ⁷ .7	51 18 17 ² .2	0 17 24 ⁶ .6	*291
15	3 22 9 ⁵ .1	18 14 13 ⁶ .6	*3102797	21 43 ⁰ .0	51 18 58 ¹ .1	0 17 24 ¹ .1	*291
16	3 22 22 ⁰ .4	18 15 0 ³ .3	*3100889	21 39 ² .2	51 19 38 ⁹ .9	0 17 23 ⁵ .5	*291
17	3 22 34 ⁴ .8	18 15 46 ⁶ .6	*3098932	21 35 ⁵ .5	51 20 19 ⁷ .7	0 17 23 ⁰ .0	*291
18	3 22 46 ⁸ .2	18 16 32 ⁵ .5	*3096926	21 31 ⁸ .8	51 21 0 ⁵ .5	0 17 22 ⁵ .5	*291
19	3 22 59 ⁰ .6	18 17 18 ⁰ .0	*3094873	21 28 ¹ .1	51 21 41 ³ .3	0 17 22 ⁰ .0	*291
20	3 23 11 ² .1	18 18 3 ⁰ .0	*3092772	21 24 ³ .3	51 22 22 ¹ .1	0 17 21 ⁵ .5	*291
21	3 23 23 ² .6	18 18 47 ⁶ .6	*3090624	21 20 ⁶ .6	51 23 2 ⁹ .9	0 17 21 ⁰ .0	*291
22	3 23 35 ² .0	18 19 31 ⁷ .7	*3088430	21 16 ⁹ .9	51 23 43 ⁷ .7	0 17 20 ⁵ .5	*291
23	3 23 47 ⁰ .3	18 20 15 ⁴ .4	*3086189	21 13 ¹ .1	51 24 24 ⁶ .6	0 17 20 ⁰ .0	*291
24	3 23 58 ⁷ .6	18 20 58 ⁷ .7	*3083902	21 9 ⁴ .4	51 25 5 ⁴ .4	0 17 19 ⁵ .5	*291
25	3 24 10 ³ .8	18 21 41 ⁴ .4	*3081570	21 5 ⁶ .6	51 25 46 ² .2	0 17 19 ⁰ .0	*291
26	3 24 21 ⁸ .8	18 22 23 ⁷ .7	*3079193	21 1 ⁹ .9	51 26 27 ⁰ .0	0 17 18 ⁴ .4	*291
27	3 24 33 ² .7	18 23 5 ⁵ .5	*3076771	20 58 ¹ .1	51 27 7 ⁸ .8	0 17 17 ⁹ .9	*291
28	3 24 44 ⁵ .4	18 23 46 ⁸ .8	*3074305	20 54 ⁴ .4	51 27 48 ⁷ .7	0 17 17 ⁴ .4	*291
29	3 24 55 ⁶ .9	18 24 27 ⁵ .5	*3071795	20 50 ⁶ .6	51 28 29 ⁵ .5	0 17 16 ⁹ .9	*291
30	3 25 6 ⁷ .2	18 25 7 ⁸ .8	*3069242	20 46 ⁹ .9	51 29 10 ³ .3	0 17 16 ⁴ .4	*291
31	3 25 17 ⁶ .2	N. 18 25 47 ⁶ .6	1 ³ 066647	20 43 ¹ .1	51 29 51 ¹ .1	S. 0 17 15 ⁹ .9	1 ²⁹ 1

JUNE, 1856.

At Transit over the Meridian of Greenwich.

<i>Apparent Right Ascension.</i>	<i>Variation of Right Asc. in 1 Hour of Long.</i>	<i>Sid. Time of Sem. pass. Mer.</i>	<i>Apparent Declination.</i>	<i>Variation of Declination in 1 Hour of Long.</i>	<i>Semi- diameter.</i>	<i>Hor. Par.</i>
h m s	s	s	° ' "	"	"	"
3 19 18.54	+ 0.56	0.12	N.18 3 29.4	+ 2.1	1.8	0.4
3 19 32.01	0.56	0.12	18 4 20.6	2.1	1.8	0.4
3 19 45.43	0.56	0.12	18 5 11.5	2.1	1.8	0.4
3 19 58.78	0.56	0.12	18 6 2.2	2.1	1.8	0.4
3 20 12.07	0.55	0.12	18 6 52.5	2.1	1.8	0.4
3 20 25.29	0.55	0.12	18 7 42.5	2.1	1.8	0.4
3 20 38.44	0.55	0.12	18 8 32.1	2.1	1.8	0.4
3 20 51.52	0.54	0.12	18 9 21.4	2.0	1.8	0.4
3 21 4.53	0.54	0.12	18 10 10.3	2.0	1.8	0.4
3 21 17.45	0.54	0.12	18 10 58.8	2.0	1.8	0.4
3 21 30.30	0.53	0.12	18 11 47.0	2.0	1.8	0.4
3 21 43.07	0.53	0.12	18 12 34.8	2.0	1.8	0.4
3 21 55.75	0.53	0.12	18 13 22.2	2.0	1.8	0.4
3 22 8.34	0.52	0.12	18 14 9.2	2.0	1.8	0.4
3 22 20.85	0.52	0.12	18 14 55.9	1.9	1.8	0.4
3 22 33.26	0.52	0.12	18 15 42.1	1.9	1.8	0.4
3 22 45.58	0.51	0.12	18 16 27.9	1.9	1.8	0.4
3 22 57.81	0.51	0.12	18 17 13.3	1.9	1.8	0.4
3 23 9.93	0.50	0.12	18 17 58.3	1.9	1.8	0.4
3 23 21.96	0.50	0.12	18 18 42.8	1.8	1.8	0.4
3 23 33.88	0.49	0.12	18 19 26.9	1.8	1.8	0.4
3 23 45.70	0.49	0.12	18 20 10.5	1.8	1.8	0.4
3 23 57.41	0.49	0.12	18 20 53.7	1.8	1.8	0.4
3 24 9.01	0.48	0.12	18 21 36.4	1.8	1.8	0.4
3 24 20.49	0.48	0.12	18 22 18.6	1.7	1.8	0.4
3 24 31.87	0.47	0.12	18 23 0.3	1.7	1.8	0.4
3 24 43.13	0.47	0.12	18 23 41.6	1.7	1.8	0.4
3 24 54.26	0.46	0.12	18 24 22.3	1.7	1.8	0.4
3 25 5.28	0.46	0.12	18 25 2.6	1.7	1.8	0.4
3 25 16.17	0.45	0.12	18 25 42.3	1.6	1.8	0.4
3 25 26.93	+ 0.45	0.12	N.18 26 21.5	+ 1.6	1.8	0.4

JULY, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	L. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N
	h m s	° ' "		h m	° ' "	° ' "	
1	3 25 17.62	N.18 25 47.6	1.3066647	20 43.1	51 29 51.1	S. 0 17 15.9	1.29
2	3 25 28.39	18 26 26.8	.3064009	20 39.4	51 30 32.0	0 17 15.4	.29
3	3 25 39.03	18 27 5.5	.3061330	20 35.6	51 31 12.8	0 17 14.9	.29
4	3 25 49.54	18 27 43.7	.3058611	20 31.9	51 31 53.6	0 17 14.4	.29
5	3 25 59.91	18 28 21.3	.3055851	20 28.1	51 32 34.4	0 17 13.9	.29
6	3 26 10.14	18 28 58.4	.3053052	20 24.4	51 33 15.2	0 17 13.3	.29
7	3 26 20.23	18 29 34.9	.3050214	20 20.6	51 33 56.1	0 17 12.8	.29
8	3 26 30.18	18 30 10.9	.3047337	20 16.8	51 34 36.9	0 17 12.3	.29
9	3 26 39.98	18 30 46.3	.3044424	20 13.0	51 35 17.7	0 17 11.8	.29
10	3 26 49.64	18 31 21.1	.3041474	20 9.3	51 35 58.5	0 17 11.3	.29
11	3 26 59.15	18 31 55.3	.3038488	20 5.5	51 36 39.4	0 17 10.8	.29
12	3 27 8.51	18 32 28.9	.3035467	20 1.7	51 37 20.2	0 17 10.3	.29
13	3 27 17.72	18 33 1.9	.3032411	19 57.9	51 38 1.0	0 17 9.8	.29
14	3 27 26.77	18 33 34.4	.3029321	19 54.1	51 38 41.8	0 17 9.3	.29
15	3 27 35.67	18 34 6.3	.3026198	19 50.4	51 39 22.7	0 17 8.8	.29
16	3 27 44.41	18 34 37.6	.3023043	19 46.6	51 40 3.5	0 17 8.2	.29
17	3 27 53.00	18 35 8.2	.3019857	19 42.8	51 40 44.3	0 17 7.7	.29
18	3 28 1.42	18 35 38.3	.3016639	19 39.0	51 41 25.1	0 17 7.2	.29
19	3 28 9.68	18 36 7.8	.3013391	19 35.2	51 42 6.0	0 17 6.7	.29
20	3 28 17.77	18 36 36.6	.3010113	19 31.4	51 42 46.8	0 17 6.2	.29
21	3 28 25.70	18 37 4.8	.3006806	19 27.6	51 43 27.6	0 17 5.7	.29
22	3 28 33.46	18 37 32.4	.3003470	19 23.8	51 44 8.4	0 17 5.2	.29
23	3 28 41.05	18 37 59.3	.3000106	19 20.0	51 44 49.3	0 17 4.7	.29
24	3 28 48.46	18 38 25.6	.2996716	19 16.2	51 45 30.1	0 17 4.2	.29
25	3 28 55.70	18 38 51.2	.2993299	19 12.4	51 46 10.9	0 17 3.6	.29
26	3 29 2.77	18 39 16.2	.2989857	19 8.5	51 46 51.7	0 17 3.1	.29
27	3 29 9.66	18 39 40.5	.2986391	19 4.7	51 47 32.5	0 17 2.6	.29
28	3 29 16.37	18 40 4.2	.2982901	19 0.9	51 48 13.3	0 17 2.1	.29
29	3 29 22.90	18 40 27.1	.2979388	18 57.1	51 48 54.2	0 17 1.6	.29
30	3 29 29.24	18 40 49.4	.2975853	18 53.2	51 49 35.0	0 17 1.1	.29
31	3 29 35.40	18 41 11.1	.2972297	18 49.4	51 50 15.8	0 17 0.6	.29
32	3 29 41.38	N.18 41 32.0	1.2968721	18 45.6	51 50 56.6	S. 0 17 0.1	1.29

URANUS.

385

JULY, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
<small>h m s</small> 3 25 26.93	+ 0.45	0.12	<small>° ' "</small> N. 18 26 21.5	+ 1.6	1.8	0.4
3 25 37.56	0.44	0.12	18 27 0.2	1.6	1.8	0.4
3 25 48.06	0.43	0.12	18 27 38.3	1.6	1.8	0.4
3 25 58.42	0.43	0.12	18 28 15.9	1.6	1.8	0.4
3 26 8.64	0.42	0.12	18 28 53.0	1.5	1.8	0.4
3 26 18.73	0.42	0.12	18 29 29.5	1.5	1.8	0.4
3 26 28.67	0.41	0.12	18 30 5.4	1.5	1.8	0.4
3 26 38.47	0.41	0.12	18 30 40.8	1.5	1.8	0.4
3 26 48.13	0.40	0.12	18 31 15.6	1.4	1.8	0.4
3 26 57.64	0.39	0.12	18 31 49.8	1.4	1.8	0.4
3 27 7.00	0.39	0.13	18 32 23.5	1.4	1.9	0.4
3 27 16.20	0.38	0.13	18 32 56.5	1.4	1.9	0.4
3 27 25.26	0.37	0.13	18 33 29.0	1.3	1.9	0.4
3 27 34.16	0.37	0.13	18 34 0.9	1.3	1.9	0.4
3 27 42.91	0.36	0.13	18 34 32.2	1.3	1.9	0.4
3 27 51.50	0.35	0.13	18 35 2.9	1.3	1.9	0.4
3 27 59.92	0.35	0.13	18 35 33.0	1.2	1.9	0.4
3 28 8.19	0.34	0.13	18 36 2.5	1.2	1.9	0.4
3 28 16.29	0.33	0.13	18 36 31.3	1.2	1.9	0.4
3 28 24.23	0.33	0.13	18 36 59.6	1.2	1.9	0.4
3 28 32.00	0.32	0.13	18 37 27.2	1.1	1.9	0.4
3 28 39.60	0.31	0.13	18 37 54.2	1.1	1.9	0.4
3 28 47.03	0.31	0.13	18 38 20.5	1.1	1.9	0.4
3 28 54.29	0.30	0.13	18 38 46.2	1.1	1.9	0.4
3 29 1.37	0.29	0.13	18 39 11.3	1.0	1	0.4
3 29 8.28	0.28	0.13	18 39 35.7	1.0	1	0.4
3 29 15.01	0.28	0.13	18 39 59.4	1.0	1	0.4
3 29 21.56	0.27	0.13	18 40 22.4	0.9	1	0.4
3 29 27.93	0.26	0.13	18 40 44.8	0.9	1	0.4
3 29 34.11	0.25	0.13	18 41 6.5	0.9	1	0.4
3 29 40.11	0.25	0.13	18 41 27.5	0.9	1	0.4
3 29 45.92	+ 0.24	0.13	N. 18 41 47.9	+ 0.8	1	0.4

AUGUST, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	I Ra
	Noon.	Noon.	Noon.		Noon.	Noon.	
1	h m s 3 29 41.38	N. 18 41 32.0	1.2968721	h m 18 45.6	51 50 56.6	S. 0 17 0.1	1.2
2	3 29 47.17	18 41 52.2	.2965126	18 41.7	51 51 37.4	0 16 59.5	.2
3	3 29 52.77	18 42 11.8	.2961512	18 37.9	51 52 18.2	0 16 59.0	.2
4	3 29 58.17	18 42 30.7	.2957881	18 34.0	51 52 59.0	0 16 58.5	.2
5	3 30 3.39	18 42 48.8	.2954234	18 30.2	51 53 39.9	0 16 58.0	.2
6	3 30 8.41	18 43 6.3	.2950571	18 26.3	51 54 20.7	0 16 57.5	.2
7	3 30 13.24	18 43 23.1	.2946894	18 22.5	51 55 1.5	0 16 57.0	.2
8	3 30 17.87	18 43 39.2	.2943204	18 18.6	51 55 42.3	0 16 56.5	.2
9	3 30 22.31	18 43 54.6	.2939502	18 14.8	51 56 23.1	0 16 55.9	.2
10	3 30 26.55	18 44 9.2	.2935789	18 10.9	51 57 3.9	0 16 55.4	.2
11	3 30 30.59	18 44 23.2	.2932065	18 7.0	51 57 44.7	0 16 54.9	.2
12	3 30 34.44	18 44 36.5	.2928332	18 3.2	51 58 25.5	0 16 54.4	.2
13	3 30 38.08	18 44 49.0	.2924591	17 59.3	51 59 6.3	0 16 53.9	.2
14	3 30 41.52	18 45 0.8	.2920842	17 55.4	51 59 47.2	0 16 53.4	.2
15	3 30 44.77	18 45 11.9	.2917087	17 51.5	52 0 28.0	0 16 52.9	.2
16	3 30 47.81	18 45 22.3	.2913326	17 47.7	52 1 8.8	0 16 52.3	.2
17	3 30 50.65	18 45 32.0	.2909560	17 43.8	52 1 49.6	0 16 51.8	.2
18	3 30 53.29	18 45 41.0	.2905791	17 39.9	52 2 30.4	0 16 51.3	.2
19	3 30 55.72	18 45 49.2	.2902019	17 36.0	52 3 11.2	0 16 50.8	.2
20	3 30 57.95	18 45 56.7	.2898245	17 32.1	52 3 52.0	0 16 50.3	.2
21	3 30 59.98	18 46 3.5	.2894470	17 28.2	52 4 32.8	0 16 49.8	.2
22	3 31 1.81	18 46 9.6	.2890695	17 24.3	52 5 13.6	0 16 49.3	.2
23	3 31 3.43	18 46 15.0	.2886921	17 20.4	52 5 54.4	0 16 48.7	.2
24	3 31 4.84	18 46 19.6	.2883149	17 16.5	52 6 35.2	0 16 48.2	.2
25	3 31 6.04	18 46 23.5	.2879381	17 12.6	52 7 16.0	0 16 47.7	.2
26	3 31 7.04	18 46 26.7	.2875618	17 8.6	52 7 56.8	0 16 47.2	.2
27	3 31 7.82	18 46 29.1	.2871861	17 4.7	52 8 37.6	0 16 46.7	.2
28	3 31 8.40	18 46 30.8	.2868111	17 0.8	52 9 18.4	0 16 46.2	.2
29	3 31 8.78	18 46 31.7	.2864369	16 56.9	52 9 59.2	0 16 45.6	.2
30	3 31 8.94	18 46 31.9	.2860636	16 52.9	52 10 40.0	0 16 45.1	.2
31	3 31 8.89	18 46 31.4	.2856914	16 49.0	52 11 20.8	0 16 44.6	.2
32	3 31 8.64	N. 18 46 30.1	1.2853204	16 45.1	52 12 1.6	S. 0 16 44.1	.2

URANUS.

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AUGUST, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
h m s	"	"	° ' "	"	"	"
3 29 45.92	+ 0.24	0.13	N.18 41 47.9	+ 0.8	1.9	0.4
3 29 51.54	0.23	0.13	18 42 7.5	0.8	1.9	0.4
3 29 56.98	0.22	0.13	18 42 26.5	0.8	1.9	0.4
3 30 2.22	0.21	0.13	18 42 44.8	0.7	1.9	0.4
3 30 7.28	0.21	0.13	18 43 2.4	0.7	1.9	0.4
3 30 12.14	0.20	0.13	18 43 19.3	0.7	1.9	0.4
3 30 16.80	0.19	0.13	18 43 35.5	0.7	1.9	0.4
3 30 21.27	0.18	0.13	18 43 51.0	0.6	1.9	0.4
3 30 25.55	0.17	0.13	18 44 5.8	0.6	1.9	0.4
3 30 29.63	0.17	0.13	18 44 19.9	0.6	1.9	0.4
3 30 33.51	0.16	0.13	18 44 33.3	0.5	1.9	0.4
3 30 37.20	0.15	0.13	18 44 46.0	0.5	1.9	0.4
3 30 40.68	0.14	0.13	18 44 57.9	0.5	1.9	0.4
3 30 43.96	0.13	0.13	18 45 9.2	0.5	1.9	0.4
3 30 47.05	0.12	0.13	18 45 19.7	0.4	1.9	0.4
3 30 49.94	0.12	0.13	18 45 29.6	0.4	1.9	0.4
3 30 52.62	0.11	0.13	18 45 38.7	0.4	1.9	0.4
3 30 55.10	0.10	0.13	18 45 47.1	0.3	1.9	0.4
3 30 57.38	0.09	0.13	18 45 54.8	0.3	1.9	0.4
3 30 59.46	0.08	0.13	18 46 1.8	0.3	1.9	0.4
3 31 1.33	0.07	0.13	18 46 8.1	0.2	1.9	0.4
3 31 3.00	0.07	0.13	18 46 13.6	0.2	1.9	0.4
3 31 4.47	0.06	0.13	18 46 18.4	0.2	1.9	0.4
3 31 5.73	0.05	0.13	18 46 22.5	0.2	1.9	0.4
3 31 6.78	0.04	0.13	18 46 25.8	0.1	1.9	0.4
3 31 7.62	0.03	0.13	18 46 28.4	0.1	1	0.4
3 31 8.26	0.02	0.13	18 46 30.3	+ 0.1	1	0.4
3 31 8.69	0.01	0.13	18 46 31.5	0.0		
3 31 8.91	+ 0.01	0.13	18 46 31.9	0.0		
3 31 8.93	0.00	0.13	18 46 31.6	0.0		
3 31 8.74	- 0.01	0.13	18 46 30.6	- 0.1		
3 31 8.34	- 0.02	0.13	N.18 46 28.8	- 0.1		

URANUS.

SEPTEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	I R
	Noon.	Noon.	Noon.		Noon.	Noon.	
1	h m s 3 31 8.64	N. 18 46 30.1	1.2853204	h m 16 45.1	52 12 1.6	S. 0 16 44.1	1.1
2	3 31 8.17	18 46 28.2	.2849506	16 41.1	52 12 42.4	0 16 43.6	1.1
3	3 31 7.50	18 46 25.5	.2845822	16 37.2	52 13 23.2	0 16 43.1	1.1
4	3 31 6.62	18 46 22.0	.2842153	16 33.2	52 14 4.0	0 16 42.5	1.1
5	3 31 5.54	18 46 17.9	.2838501	16 29.3	52 14 44.8	0 16 42.0	1.1
6	3 31 4.25	18 46 13.0	.2834866	16 25.3	52 15 25.6	0 16 41.5	1.1
7	3 31 2.75	18 46 7.4	.2831250	16 21.3	52 16 6.4	0 16 41.0	1.1
8	3 31 1.05	18 46 1.1	.2827653	16 17.4	52 16 47.2	0 16 40.5	1.1
9	3 30 59.15	18 45 54.1	.2824077	16 13.4	52 17 28.0	0 16 40.0	1.1
10	3 30 57.04	18 45 46.4	.2820523	16 9.4	52 18 8.8	0 16 39.4	1.1
11	3 30 54.74	18 45 38.0	.2816993	16 5.5	52 18 49.6	0 16 38.9	1.1
12	3 30 52.23	18 45 28.9	.2813486	16 1.5	52 19 30.4	0 16 38.4	1.1
13	3 30 49.53	18 45 19.1	.2810004	15 57.5	52 20 11.2	0 16 37.9	1.1
14	3 30 46.63	18 45 8.5	.2806549	15 53.5	52 20 52.0	0 16 37.4	1.1
15	3 30 43.53	18 44 57.3	.2803121	15 49.6	52 21 32.8	0 16 36.9	1.1
16	3 30 40.24	18 44 45.4	.2799721	15 45.6	52 22 13.6	0 16 36.3	1.1
17	3 30 36.75	18 44 32.8	.2796351	15 41.6	52 22 54.4	0 16 35.8	1.1
18	3 30 33.07	18 44 19.5	.2793011	15 37.6	52 23 35.2	0 16 35.3	1.1
19	3 30 29.19	18 44 5.6	.2789703	15 33.6	52 24 16.0	0 16 34.8	1.1
20	3 30 25.13	18 43 50.9	.2786428	15 29.6	52 24 56.8	0 16 34.3	1.1
21	3 30 20.87	18 43 35.6	.2783187	15 25.6	52 25 37.6	0 16 33.8	1.1
22	3 30 16.42	18 43 19.7	.2779981	15 21.6	52 26 18.4	0 16 33.2	1.1
23	3 30 11.79	18 43 3.1	.2776811	15 17.5	52 26 59.2	0 16 32.7	1.1
24	3 30 6.97	18 42 45.8	.2773678	15 13.5	52 27 40.0	0 16 32.2	1.1
25	3 30 1.97	18 42 27.9	.2770583	15 9.5	52 28 20.8	0 16 31.7	1.1
26	3 29 56.79	18 42 9.3	.2767528	15 5.5	52 29 1.6	0 16 31.2	1.1
27	3 29 51.43	18 41 50.0	.2764513	15 1.5	52 29 42.5	0 16 30.7	1.1
28	3 29 45.89	18 41 30.2	.2761540	14 57.5	52 30 23.3	0 16 30.1	1.1
29	3 29 40.18	18 41 9.7	.2758610	14 53.4	52 31 4.1	0 16 29.6	1.1
30	3 29 34.29	18 40 48.6	.2755724	14 49.4	52 31 44.9	0 16 29.1	1.1
31	3 29 28.23	N. 18 40 26.9	1.2752884	14 45.4	52 32 25.7	S. 0 16 28.6	1.1

SEPTEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	s	s	° ' "	"	"	"
3 31 8.34	- 0.02	0.13	N. 18 46 28.8	- 0.1	1.9	0.4
3 31 7.73	0.03	0.13	18 46 26.4	0.1	1.9	0.4
3 31 6.92	0.04	0.13	18 46 23.2	0.2	1.9	0.4
3 31 5.90	0.05	0.13	18 46 19.2	0.2	1.9	0.4
3 31 4.68	0.06	0.13	18 46 14.6	0.2	1.9	0.4
3 31 3.25	0.06	0.13	18 46 9.3	0.2	1.9	0.4
3 31 1.62	0.07	0.13	18 46 3.2	0.3	1.9	0.4
3 30 59.78	0.08	0.13	18 45 56.5	0.3	1.9	0.4
3 30 57.75	0.09	0.13	18 45 49.0	0.3	1.9	0.4
3 30 55.52	0.10	0.13	18 45 40.8	0.4	1.9	0.4
3 30 53.08	0.11	0.13	18 45 32.0	0.4	1.9	0.4
3 30 50.45	0.11	0.13	18 45 22.4	0.4	1.9	0.4
3 30 47.62	0.12	0.14	18 45 12.1	0.4	2.0	0.4
3 30 44.60	0.13	0.14	18 45 1.2	0.5	2.0	0.4
3 30 41.38	0.14	0.14	18 44 49.5	0.5	2.0	0.4
3 30 37.97	0.15	0.14	18 44 37.2	0.5	2.0	0.5
3 30 34.37	0.15	0.14	18 44 24.2	0.6	2.0	0.5
3 30 30.57	0.16	0.14	18 44 10.5	0.6	2.0	0.5
3 30 26.58	0.17	0.14	18 43 56.2	0.6	2.0	0.5
3 30 22.40	0.18	0.14	18 43 41.2	0.6	2.0	0.5
3 30 18.03	0.19	0.14	18 43 25.5	0.7	2.0	0.5
3 30 13.48	0.19	0.14	18 43 9.1	0.7	2.0	0.5
3 30 8.74	0.20	0.14	18 42 52.1	0.7	2.0	0.5
3 30 3.82	0.21	0.14	18 42 34.5	0.7	2.0	0.5
3 29 58.72	0.22	0.14	18 42 16.2	0.8		
3 29 53.44	0.22	0.14	18 41 57.3	0.8		
3 29 47.98	0.23	0.14	18 41 37.7	0.8		
3 29 42.35	0.24	0.14	18 41 17.5	0.9		
3 29 36.55	0.25	0.14	18 40 56.7	0.9		
3 29 30.57	0.25	0.14	18 40 35.3	0.9		
3 29 24.42	- 0.26	0.14	N. 18 40 13.3	- 0.		

OCTOBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
	h m s	° ' "		h m	° ' "	S. ° ' "	
1	3 29 28.23	N. 18 40 26.9	1.2752884	14 45.4	52 32 25.7	S. 0 16 28.6	1.2912597
2	3 29 22.00	18 40 4.6	2750090	14 41.3	52 33 6.5	0 16 28.1	2912561
3	3 29 15.61	18 39 41.7	2747344	14 37.3	52 33 47.3	0 16 27.6	2912525
4	3 29 9.05	18 39 18.2	2744646	14 33.2	52 34 28.2	0 16 27.0	2912489
5	3 29 2.34	18 38 54.2	2741998	14 29.2	52 35 9.0	0 16 26.5	2912453
6	3 28 55.47	18 38 29.6	2739400	14 25.1	52 35 49.8	0 16 26.0	2912417
7	3 28 48.45	18 38 4.4	2736853	14 21.1	52 36 30.6	0 16 25.5	2912381
8	3 28 41.28	18 37 38.7	2734358	14 17.0	52 37 11.4	0 16 25.0	2912344
9	3 28 33.96	18 37 12.5	2731917	14 13.0	52 37 52.3	0 16 24.5	2912308
10	3 28 26.50	18 36 45.7	2729529	14 8.9	52 38 33.1	0 16 23.9	2912272
11	3 28 18.89	18 36 18.5	2727196	14 4.9	52 39 13.9	0 16 23.4	2912236
12	3 28 11.15	18 35 50.7	2724919	14 0.8	52 39 54.7	0 16 22.9	2912200
13	3 28 3.27	18 35 22.4	2722697	13 56.8	52 40 35.6	0 16 22.4	2912164
14	3 27 55.27	18 34 53.7	2720533	13 52.7	52 41 16.4	0 16 21.9	2912128
15	3 27 47.13	18 34 24.5	2718426	13 48.6	52 41 57.2	0 16 21.4	2912092
16	3 27 38.86	18 33 54.8	2716379	13 44.5	52 42 38.0	0 16 20.8	2912055
17	3 27 30.48	18 33 24.6	2714391	13 40.5	52 43 18.9	0 16 20.3	2912019
18	3 27 21.97	18 32 54.0	2712463	13 36.4	52 43 59.7	0 16 19.8	2911983
19	3 27 13.34	18 32 23.0	2710597	13 32.3	52 44 40.6	0 16 19.3	2911947
20	3 27 4.60	18 31 51.5	2708793	13 28.3	52 45 21.4	0 16 18.8	2911911
21	3 26 55.75	18 31 19.6	2707052	13 24.2	52 46 2.3	0 16 18.3	2911874
22	3 26 46.80	18 30 47.3	2705374	13 20.1	52 46 43.1	0 16 17.7	2911838
23	3 26 37.74	18 30 14.6	2703761	13 16.0	52 47 24.0	0 16 17.2	2911802
24	3 26 28.59	18 29 41.5	2702213	13 11.9	52 48 4.8	0 16 16.7	2911766
25	3 26 19.35	18 29 8.1	2700729	13 7.8	52 48 45.7	0 16 16.2	2911730
26	3 26 10.01	18 28 34.4	2699312	13 3.8	52 49 26.5	0 16 15.7	2911693
27	3 26 0.59	18 28 0.4	2697961	12 59.7	52 50 7.4	0 16 15.2	2911657
28	3 25 51.09	18 27 26.1	2696677	12 55.6	52 50 48.2	0 16 14.6	2911621
29	3 25 41.52	18 26 51.4	2695462	12 51.5	52 51 29.1	0 16 14.1	2911584
30	3 25 31.87	18 26 16.5	2694315	12 47.4	52 52 9.9	0 16 13.6	2911548
31	3 25 22.15	18 25 41.3	2693238	12 43.3	52 52 50.8	0 16 13.1	2911512
32	3 25 12.37	N. 18 25 5.8	1.2692231	12 39.2	52 53 31.7	S. 0 16 12.6	1.2911476

URANUS.

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OCTOBER, 1856.

At Transit over the Meridian of Greenwich.

Day of the Month.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
1	h m s 3 29 24.42	s - 0.26	s 0.14	N. 18 40 13.3	" 0.9	" 2.0	" 0.5
2	3 29 18.11	0.27	0.14	18 39 50.7	1.0	2.0	0.5
3	3 29 11.63	0.27	0.14	18 39 27.5	1.0	2.0	0.5
4	3 29 5.00	0.28	0.14	18 39 3.7	1.0	2.0	0.5
5	3 28 58.21	0.29	0.14	18 38 39.4	1.0	2.0	0.5
6	3 28 51.27	0.29	0.14	18 38 14.5	1.0	2.0	0.5
7	3 28 44.18	0.30	0.14	18 37 49.1	1.1	2.0	0.5
8	3 28 36.94	0.30	0.14	18 37 23.2	1.1	2.0	0.5
9	3 28 29.56	0.31	0.14	18 36 56.7	1.1	2.0	0.5
10	3 28 22.03	0.32	0.14	18 36 29.7	1.1	2.0	0.5
11	3 28 14.37	0.32	0.14	18 36 2.3	1.2	2.0	0.5
12	3 28 6.57	0.33	0.14	18 35 34.3	1.2	2.0	0.5
13	3 27 58.64	0.33	0.14	18 35 5.8	1.2	2.0	0.5
14	3 27 50.58	0.34	0.14	18 34 36.8	1.2	2.0	0.5
15	3 27 42.39	0.34	0.14	18 34 7.4	1.2	2.0	0.5
16	3 27 34.08	0.35	0.14	18 33 37.5	1.3	2.0	0.5
17	3 27 25.65	0.35	0.14	18 33 7.2	1.3	2.0	0.5
18	3 27 17.09	0.36	0.14	18 32 36.4	1.3	2.0	0.5
19	3 27 8.42	0.36	0.14	18 32 5.2	1.3	2.0	0.5
20	3 26 59.64	0.37	0.14	18 31 33.6	1.3	2.0	0.5
21	3 26 50.76	0.37	0.14	18 31 1.6	1.3	2.0	0.5
22	3 26 41.78	0.38	0.14	18 30 29.2	1.4	2.0	0.5
23	3 26 32.70	0.38	0.14	" 56.4	1.4	2.0	0.5
24	3 26 23.52	0.38	0.14	" 2	1.4	2.0	0.5
25	3 26 14.25	0.39	0.14		1.4	2.0	0.5
26	3 26 4.90	0.39	0.1		1.4	2.0	0.5
27	3 25 55.46	0.40	0.		1.4	2.0	0.5
28	3 25 45.95	0.40	"		1.		0.5
29	3 25 36.36	0.40			1.		0.5
30	3 25 26.70	0.40			1.		0.5
31	3 25 16.97	0.41			1.		0.5
32	3 25 7.18	- 0.41					0.5

NOVEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1	h m s 3 25 12.37	N. 18 25 5.8	1.2692231	h m 12 39.2	° ' " 52 53 31.7	S. 0 16 12.6	1.2911476
2	3 25 2.52	18 24 30.1	.2691294	12 35.1	52 54 12.6	0 16 12.1	.2911439
3	3 24 52.62	18 23 54.2	.2690429	12 31.0	52 54 53.4	0 16 11.5	.2911403
4	3 24 42.68	18 23 18.0	.2689634	12 26.9	52 55 34.3	0 16 11.0	.2911367
5	3 24 32.68	18 22 41.7	.2688911	12 22.8	52 56 15.2	0 16 10.5	.2911330
6	3 24 22.64	18 22 5.2	.2688259	12 18.7	52 56 56.0	0 16 10.0	.2911294
7	3 24 12.57	18 21 28.6	.2687678	12 14.6	52 57 36.9	0 16 9.5	.2911257
8	3 24 2.47	18 20 51.9	.2687169	12 10.5	52 58 17.8	0 16 9.0	.2911221
9	3 23 52.33	18 20 15.0	.2686732	12 6.4	52 58 58.7	0 16 8.4	.2911184
10	3 23 42.17	18 19 38.0	.2686367	12 2.3	52 59 39.6	0 16 7.9	.2911149
11	3 23 31.99	18 19 0.9	.2686075	11 58.2	53 0 20.5	0 16 7.4	.2911112
12	3 23 21.79	18 18 23.7	.2685855	11 54.1	53 1 1.4	0 16 6.9	.2911076
13	3 23 11.58	18 17 46.4	.2685707	11 50.0	53 1 42.2	0 16 6.4	.2911040
14	3 23 1.36	18 17 9.1	.2685632	11 45.9	53 2 23.1	0 16 5.9	.2911003
15	3 22 51.14	18 16 31.8	.2685629	11 41.8	53 3 4.0	0 16 5.3	.2910967
16	3 22 40.92	18 15 54.4	.2685699	11 37.7	53 3 44.9	0 16 4.8	.2910930
17	3 22 30.71	18 15 17.0	.2685842	11 33.6	53 4 25.8	0 16 4.3	.2910894
18	3 22 20.51	18 14 39.7	.2686058	11 29.5	53 5 6.7	0 16 3.8	.2910858
19	3 22 10.32	18 14 2.4	.2686346	11 25.4	53 5 47.6	0 16 3.3	.2910821
20	3 22 0.16	18 13 25.1	.2686707	11 21.3	53 6 28.6	0 16 2.7	.2910785
21	3 21 50.02	18 12 47.9	.2687140	11 17.2	53 7 9.5	0 16 2.2	.2910748
22	3 21 39.91	18 12 10.8	.2687646	11 13.1	53 7 50.4	0 16 1.7	.2910712
23	3 21 29.83	18 11 33.8	.2688225	11 9.0	53 8 31.3	0 16 1.2	.2910676
24	3 21 19.79	18 10 56.9	.2688876	11 4.9	53 9 12.2	0 16 0.7	.2910639
25	3 21 9.79	18 10 20.2	.2689600	11 0.8	53 9 53.2	0 16 0.1	.2910603
26	3 20 59.83	18 9 43.6	.2690395	10 56.7	53 10 34.1	0 15 59.6	.2910566
27	3 20 49.93	18 9 7.1	.2691263	10 52.6	53 11 15.0	0 15 59.1	.2910530
28	3 20 40.08	18 8 30.9	.2692202	10 48.5	53 11 55.9	0 15 58.6	.2910493
29	3 20 30.29	18 7 54.9	.2693212	10 44.4	53 12 36.9	0 15 58.1	.2910457
30	3 20 20.57	18 7 19.1	.2694293	10 40.3	53 13 17.8	0 15 57.5	.2910420
31	3 20 10.92	N. 18 6 43.6	1.2695443	10 36.3	53 13 58.7	S. 0 15 57.0	1.2910384

URANUS.

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NOVEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. per. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi- diameter.	Hor. Par.
m s	s	s	° ' "	"	"	"
25 7 18	- 0'41	0'14	N. 18 24 47 0	- 1'5	2'0	0'5
24 57 34	0'41	0'14	18 24 31 3	1'5	2'0	0'5
24 47 44	0'41	0'14	18 23 35 3	1'5	2'0	0'5
24 37 50	0'42	0'14	18 22 59 2	1'5	2'0	0'5
24 27 51	0'42	0'14	18 22 22 9	1'5	2'0	0'5
24 17 48	0'42	0'14	18 21 46 5	1'5	2'0	0'5
24 7 42	0'42	0'14	18 21 9 9	1'5	2'0	0'5
23 57 33	0'42	0'14	18 20 33 2	1'5	2'0	0'5
23 47 21	0'42	0'14	18 19 56 4	1'5	2'0	0'5
23 37 07	0'42	0'14	18 19 19 4	1'5	2'0	0'5
23 26 91	0'42	0'14	18 18 42 4	1'5	2'0	0'5
23 16 73	0'42	0'14	18 18 5 2	1'6	2'0	0'5
23 6 54	0'42	0'14	18 17 28 0	1'6	2'0	0'5
22 56 35	0'42	0'14	18 16 50 8	1'6	2'0	0'5
22 46 16	0'42	0'14	18 16 13 5	1'6	2'0	0'5
22 35 98	0'42	0'14	18 15 36 2	1'6	2'0	0'5
22 25 80	0'42	0'14	18 14 59 0	1'6	2'0	0'5
22 15 63	0'42	0'14	18 14 21 8	1'6	2'0	0'5
22 5 49	0'42	0'14	18 13 44 6	1'5	2'0	0'5
21 55 36	0'42	0'14	18 13 7 5	1'5	2'0	0'5
21 45 26	0'42	0'14	18 12 30 4	1'5	2'0	0'5
21 35 19	0'42	0'14	18 11 53 5	1'5	2'0	0'5
21 25 16	0'42	0'14	18 11 16 7	1'5	2'0	0'5
21 15 16	0'42	0'14	18 10 39 9	1'5	2'0	0'5
21 5 21	0'41	0'14	18	1'5	2'0	0'5
20 55 31	0'41	0'14		1'5	2'0	0'5
20 45 46	0'41	0'14		1'5	2'0	0'5
20 35 66	0'41	0'14		1'5		0'5
20 25 93	0'40	0'		1'5		0'5
20 16 26	0'40	0'		1'5		5
20 6 67	- 0'40	0'		1'5		5

DECEMBER, 1856.

MEAN TIME.

Day of the Month.	Geocentric.				Heliocentric.		
	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Longitude.	Latitude.	Log. Rad.
	Noon.	Noon.	Noon.		Noon.	Noon.	N
1	h m s 3 20 10.92	N. 18 6 43.6	1.2695443	h m 10 36.3	o ' " 53 13 58.7	S. 0 15 57.0	1.29
2	3 20 1.34	18 6 8.4	.2696664	10 32.2	53 14 39.7	0 15 56.5	.29
3	3 19 51.84	18 5 33.4	.2697954	10 28.1	53 15 20.6	0 15 56.0	.29
4	3 19 42.42	18 4 58.8	.2699312	10 24.0	53 16 1.5	0 15 55.5	.29
5	3 19 33.09	18 4 24.4	.2700739	10 19.9	53 16 42.5	0 15 54.9	.29
6	3 19 23.85	18 3 50.4	.2702232	10 15.8	53 17 23.4	0 15 54.4	.29
7	3 19 14.71	18 3 16.7	.2703792	10 11.7	53 18 4.3	0 15 53.9	.29
8	3 19 5.67	18 2 43.3	.2705417	10 7.7	53 18 45.3	0 15 53.4	.29
9	3 18 56.73	18 2 10.4	.2707108	10 3.6	53 19 26.2	0 15 52.9	.29
10	3 18 47.89	18 1 37.8	.2708864	9 59.5	53 20 7.2	0 15 52.3	.29
11	3 18 39.17	18 1 5.6	.2710684	9 55.4	53 20 48.1	0 15 51.8	.29
12	3 18 30.56	18 0 33.8	.2712567	9 51.4	53 21 29.1	0 15 51.3	.29
13	3 18 22.07	18 0 2.5	.2714513	9 47.3	53 22 10.0	0 15 50.8	.29
14	3 18 13.69	17 59 31.6	.2716521	9 43.2	53 22 51.0	0 15 50.3	.29
15	3 18 5.44	17 59 1.2	.2718589	9 39.2	53 23 31.9	0 15 49.7	.29
16	3 17 57.32	17 58 31.3	.2720719	9 35.1	53 24 12.9	0 15 49.2	.29
17	3 17 49.33	17 58 1.8	.2722908	9 31.0	53 24 53.8	0 15 48.7	.29
18	3 17 41.47	17 57 32.9	.2725156	9 27.0	53 25 34.8	0 15 48.2	.29
19	3 17 33.76	17 57 4.4	.2727462	9 22.9	53 26 15.7	0 15 47.7	.29
20	3 17 26.18	17 56 36.5	.2729825	9 18.8	53 26 56.7	0 15 47.1	.29
21	3 17 18.75	17 56 9.2	.2732244	9 14.8	53 27 37.6	0 15 46.6	.29
22	3 17 11.46	17 55 42.4	.2734719	9 10.7	53 28 18.6	0 15 46.1	.29
23	3 17 4.33	17 55 16.2	.2737249	9 6.7	53 28 59.5	0 15 45.6	.29
24	3 16 57.35	17 54 50.6	.2739833	9 2.6	53 29 40.5	0 15 45.1	.29
25	3 16 50.54	17 54 25.5	.2742470	8 58.6	53 30 21.5	0 15 44.5	.29
26	3 16 43.88	17 54 1.1	.2745158	8 54.5	53 31 2.4	0 15 44.0	.29
27	3 16 37.39	17 53 37.3	.2747897	8 50.5	53 31 43.4	0 15 43.5	.29
28	3 16 31.07	17 53 14.2	.2750686	8 46.5	53 32 24.3	0 15 43.0	.29
29	3 16 24.92	17 52 51.7	.2753524	8 42.4	53 33 5.3	0 15 42.5	.29
30	3 16 18.94	17 52 29.9	.2756408	8 38.4	53 33 46.2	0 15 41.9	.29
31	3 16 13.14	17 52 8.8	.2759338	8 34.4	53 34 27.2	0 15 41.4	.29
32	3 16 7.52	N. 17 51 48.4	1.2762313	8 30.4	53 35 8.2	S. 0 15 40.9	1.2

DECEMBER, 1856.

At Transit over the Meridian of Greenwich.

Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sen. pass. Mer.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
h m s	''	''	° ' "	''	''	''
3 20 6.67	- 0.40	0.14	N.18 6 28.0	- 1.5	2.0	0.5
3 19 57.15	0.40	0.14	18 5 53.0	1.5	2.0	0.5
3 19 47.71	0.39	0.14	18 5 18.2	1.4	2.0	0.5
3 19 38.36	0.39	0.14	18 4 43.8	1.4	2.0	0.5
3 19 29.10	0.38	0.14	18 4 9.7	1.4	2.0	0.5
3 19 19.93	0.38	0.14	18 3 35.9	1.4	2.0	0.5
3 19 10.85	0.38	0.14	18 3 2.5	1.4	2.0	0.5
3 19 1.88	0.37	0.14	18 2 29.4	1.4	2.0	0.5
3 18 53.01	0.37	0.14	18 1 56.7	1.4	2.0	0.5
3 18 44.25	0.36	0.14	18 1 24.3	1.3	2.0	0.5
3 18 35.60	0.36	0.14	18 0 52.4	1.3	2.0	0.5
3 18 27.06	0.35	0.14	18 0 20.9	1.3	2.0	0.5
3 18 18.64	0.35	0.14	17 59 49.9	1.3	2.0	0.5
3 18 10.34	0.34	0.14	17 59 19.3	1.3	2.0	0.5
3 18 2.16	0.34	0.14	17 58 49.1	1.2	2.0	0.5
3 17 54.11	0.33	0.14	17 58 19.4	1.2	2.0	0.5
3 17 46.20	0.33	0.14	17 57 50.3	1.2	2.0	0.5
3 17 38.42	0.32	0.14	17 57 21.6	1.2	2.0	0.5
3 17 30.78	0.32	0.14	17 56 53.5	1.2	2.0	0.5
3 17 23.28	0.31	0.14	17 56 25.9	1.1	2.0	0.5
3 17 15.92	0.30	0.14	17 55 58.8	1.1	2.0	0.5
3 17 8.71	0.30	0.14	17 55 32.3	1.1	2.0	0.5
3 17 1.66	0.29	0.14	17 55 6.4	1.1	2.0	0.5
3 16 54.77	0.28	0.14	17 54 41.1	1.0	2.0	0.5
3 16 48.03	0.28	0.14	17 54 16.3	1.0	2.0	0.5
3 16 41.45	0.27	0.14	17 53 52.2	1.0	2.0	0.5
3 16 35.04	0.26	0.14	17 53 28.7	1.0	2.0	0.5
3 16 28.80	0.26	0.14	17 53 5.9	0.9	2.0	0.5
3 16 22.73	0.25	0.14	17 52 43.7	0.9	2.0	0.5
3 16 16.83	0.24	0.14	17 52 22.2	0.9	2.0	0.5
3 16 11.11	0.23	0.14	17 52 1.4	0.9	2.0	0.5
3 16 5.57	- 0.23	0.14	N.17 51 41.3	- 0.8	2.0	0.5

FIXED STARS.

MEAN PLACES OF 100 PRINCIPAL FIXED STARS,
FOR JANUARY 1, 1856.

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual Var.
α Andromedæ - - -	2	h m s 0 0 57.057	+ 3.0840	N.28 17 43.04	+19.902
γ Pegasi (<i>Algenib</i>)	3.2	0 5 49.447	3.0812	N.14 22 58.03	20.031
β Hydri - - - - -	3	0 18 6.914	3.2928	S.78 3 57.90	20.253
α Cassiopeæ - - -	var.	0 32 21.685	3.3547	N.55 44 48.99	19.817
β Ceti - - - - -	2	0 36 21.483	+ 3.0130	S.18 46 40.35	+19.825
α Urs. Min. (<i>Polaris</i>)	2	1 6 48.537	18.3362	N.88 32 30.58	19.209
θ Ceti - - - - -	3	1 16 49.525	2.9962	S. 8 55 40.13	18.719
α Eridani (<i>Achernar</i>)	1	1 32 20.724	2.2367	S.57 58 9.52	18.438
α Arietis - - - - -	2	1 59 3.807	+ 3.3635	N.22 46 45.49	+17.259
γ Ceti - - - - -	3.4	2 35 50.508	3.1000	N. 2 37 34.42	15.412
α Ceti - - - - -	2.3	2 54 45.278	3.1264	N. 3 31 18.86	14.390
α Persei - - - - -	2	3 14 3.761	4.2414	N.49 20 40.06	13.234
η Tauri - - - - -	3	3 38 55.836	+ 3.5499	N.23 39 22.40	+11.518
γ Eridani - - - - -	3	3 51 18.680	2.7940	S.13 55 16.40	10.561
α Tauri (<i>Aldebaran</i>)	1	4 27 39.705	3.4339	N.16 12 56.97	7.687
α Aurigæ (<i>Capella</i>)	1	5 6 3.459	4.4195	N.45 50 45.77	4.244
β Orionis (<i>Rigel</i>) -	1	5 7 37.114	+ 2.8802	S. 8 22 18.05	+ 4.522
β Tauri - - - - -	2	5 17 11.508	3.7882	N.28 28 51.59	3.524
δ Orionis - - - - -	2	5 24 39.088	3.0636	S. 0 24 34.78	3.041
α Leporis - - - - -	3	5 26 22.820	2.6457	S.17 55 43.08	2.934
ϵ Orionis - - - - -	2	5 28 54.445	+ 3.0410	S. 1 17 51.96	+ 2.696
α Columbæ - - - - -	2	5 34 26.234	2.1774	S.34 9 11.08	2.231
α Orionis - - - - -	var.	5 47 22.599	3.2465	N. 7 22 33.68	+ 1.099
μ Geminorum - - -	3	6 14 14.898	3.6323	N.22 34 58.49	- 1.376
α Argus (<i>Canopus</i>)	1	6 20 45.460	+ 1.3301	S.52 37 6.47	- 1.815
γ (Hev.) Cephei - -	5	6 31 35.326	30.5106	N.87 15 5.23	2.858
α Canis Maj. (<i>Sirius</i>)	1	6 38 48.270	2.6463	S.16 31 19.72	4.606
ϵ Canis Majoris - -	2.1	6 52 58.021	2.3578	S.28 46 45.30	4.607
δ Geminorum - - -	3.4	7 11 31.198	+ 3.5924	N.22 14 35.55	- 6.176
α Geminor. (<i>Castor</i>)	2.1	7 25 24.357	3.8433	N.32 11 58.73	7.380
α Can.Min. (<i>Procyon</i>)	1	7 31 45.659	3.1449	N. 5 35 26.70	8.851
β Geminor. (<i>Pollux</i>)	1.2	7 36 29.907	3.6822	N.28 22 11.59	8.258
15 Argus - - - - -	3	8 1 24.717	+ 2.5547	S.23 53 30.74	-10.069
ϵ Hydræ - - - - -	3.4	8 39 8.858	3.1848	N. 6 56 39.19	12.874
δ Ursæ Majoris - -	3	8 49 19.627	4.1464	N.48 36 12.93	13.783
δ Argus - - - - -	2	9 13 14.123	1.6019	S.58 40 18.20	14.907
α Hydræ - - - - -	2	9 20 30.602	+ 2.9480	S. 8 2 12.26	-15.362
θ Ursæ Majoris - -	3	9 23 12.045	4.0597	N.52 19 50.61	16.104
ϵ Leonis - - - - -	3	9 37 40.205	3.4213	N.24 26 6.00	16.331
α Leonis (<i>Regulus</i>)	1.2	10 0 41.926	+ 3.2026	N.12 40 8.96	-17.391

FIXED STARS.

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MEAN PLACES OF 100 PRINCIPAL FIXED STARS, FOR JANUARY 1, 1856.

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual Var.
		h m s	s	° ' "	"
η Argus - - - -	2	10 39 29.052	+ 2.3063	S. 58 55 40.29	-18.740
α Ursæ Majoris - - -	2	10 54 48.378	3.7763	N. 62 31 37.93	19.340
δ Leonis - - - -	2.3	11 6 26.672	3.2043	N. 21 18 42.70	19.656
δ Hydræ et Crateris -	3.4	11 12 8.586	2.9941	S. 13 59 59.89	19.443
β Leonis - - - -	2	11 41 42.660	+ 3.0651	N. 15 22 36.70	-20.095
γ Ursæ Majoris - - -	2.3	11 46 14.224	3.1955	N. 54 29 43.12	20.025
β Chamæleontis - - -	5	12 9 59.370	3.3153	S. 78 30 45.36	20.045
α Crucis - - - -	1	12 18 37.061	3.2557	S. 62 17 59.08	19.938
β Corvi - - - -	2.3	12 26 49.686	+ 3.1296	S. 22 36 0.09	-19.986
ι 2 Canum Venaticor. -	3	12 49 17.052	2.8182	N. 39 5 48.99	19.537
α Virginis (<i>Spica</i>)	1	13 17 36.647	3.1491	S. 10 24 30.27	18.955
η Ursæ Majoris - - -	2	13 41 51.705	2.3743	N. 50 1 59.88	18.130
η Bootis - - - -	3	13 47 49.663	+ 2.8582	N. 19 7 16.14	-18.231
β Centauri - - - -	1	13 53 42.079	4.1501	S. 59 40 31.99	17.706
α Bootis (<i>Arcturus</i>)	1	14 9 5.630	2.7335	N. 19 56 2.27	18.935
α Centauri - - - -	1	14 29 51.903	4.0245	S. 60 14 8.41	15.079
ι Bootis - - - -	2.3	14 38 41.837	+ 2.6194	N. 27 41 0.14	-15.431
α Libræ - - - -	2.3	14 42 55.114	+ 3.3064	S. 15 26 26.35	15.256
β Ursæ Minoris - - -	2	14 51 10.450	- 0.2634	N. 74 44 37.78	14.754
β Libræ - - - -	2	15 9 15.713	+ 3.2173	S. 8 50 54.96	13.611
α Coronæ Borealis - -	2	15 28 35.468	+ 2.5374	N. 27 12 6.62	-12.378
α Serpentis - - - -	2.3	15 37 10.610	+ 2.9503	N. 6 52 53.98	11.647
ζ Ursæ Minoris - - -	4.5	15 49 17.828	- 2.3175	N. 78 14 7.32	10.823
β Scorpii - - - -	2	15 57 4.138	+ 3.4756	S. 19 24 26.94	10.268
δ Ophiuchi - - - -	3	16 6 48.094	+ 3.1351	S. 3 19 12.64	- 9.629
α Scorpii (<i>Antares</i>)	1.2	16 20 35.041	3.6660	S. 26 6 29.70	8.456
η Draconis - - - -	3.2	16 22 3.338	0.8209	N. 61 50 28.09	8.232
α Trianguli Australis	2	16 33 27.706	+ 6.2689	S. 68 45 20.27	7.470
ι Ursæ Minoris - - -	4.5	17 0 51.879	- 6.5027	N. 82 16 1.71	- 5.120
α Herculis - - - -	var.	17 8 4.890	+ 2.7313	N. 14 33 28.12	4.459
β Draconis - - - -	3.2	17 27 10.795	1.3501	N. 52 24 34.50	2.859
α Ophiuchi - - - -	2	17 28 15.009	+ 2.7792	N. 12 40 5.73	2.977
σ Octantis - - - -	6	17 40 51.850	108.7605	S. 89 16 34.93	- 1.577
γ Draconis - - - -	2.3	17 53 15.790	1.3920	N. 51 30 26.70	- 0.628
μ Sagittarii - - - -	4	18 5 9.052	+ 3.5844	S. 21 5 31.49	+ 0.447
δ Ursæ Minoris - - -	4.5	18 18 47.757	-19.3312	N. 86 36 0.46	1.654
α Lyræ (<i>Vega</i>)	1	18 32 3.730	+ 2.0300	N. 38 39 7.80	+
β Lyræ - - - -	var.	18 44 45.750	2.2119	N. 33 11 52.72	+
ζ Aquilæ - - - -	3	18 58 47.387	2.7521	N. 13 39 9.91	+
δ Aquilæ - - - -	3.4	19 18 14.187	+ 3.0242	N. 2 49 52.18	.

FIXED STARS.

MEAN PLACES OF 100 PRINCIPAL FIXED STARS,
FOR JANUARY 1, 1856.

Star's Name.	Mag.	Right Ascension.	Annual Var.	Declination.	Annual Var.
γ Aquilæ - - - -	3	h m s 19 39 24.769	+ 2.8538	N. 10 15 55.82	+ 8.434
α Aquilæ (<i>Altair</i>)	1.2	19 43 45.367	2.9277	N. 8 29 28.59	0.158
β Aquilæ - - - -	4	19 48 14.329	+ 2.9485	N. 6 3 0.84	8.649
λ Ursæ Minoris - -	5	20 7 36.741	- 55.1312	N. 88 52 42.79	10.574
α Capricorni - - -	3.4	20 10 3.644	+ 3.3341	S. 12 59 16.39	+ 10.783
α Pavonis - - - -	2	20 14 13.989	4.8037	S. 57 11 28.95	11.059
α Cygni - - - -	2.1	20 36 31.351	2.0418	N. 44 46 3.58	12.659
61^{st} Cygni - - - -	5.6	21 0 26.527	2.6732	N. 38 2 36.77	17.454
ζ Cygni - - - -	3	21 6 48.489	+ 2.5476	N. 29 38 17.61	+ 14.528
α Cephei - - - -	3.4	21 15 8.385	1.4386	N. 61 58 34.98	15.094
β Aquarii - - - -	3	21 23 38.468	3.1639	S. 6 12 8.38	15.592
β Cephei - - - -	3	21 26 47.155	0.8044	N. 69 55 44.49	15.698
ϵ Pegasi - - - -	2.3	21 37 6.781	+ 2.9481	N. 9 13 0.49	+ 16.286
α Aquarii - - - -	3	21 58 23.113	3.0821	S. 1 1 3.99	17.287
α Gruls - - - -	2	21 59 8.296	3.8208	S. 47 39 20.35	17.151
ζ Pegasi - - - -	3.4	22 34 16.785	2.9869	N. 10 4 51.34	18.673
α Pis. Aus. (<i>Fomalhaut</i>)	1.2	22 49 41.017	+ 3.3313	S. 30 23 3.70	+ 18.947
α Pegasi (<i>Markab</i>)	2	22 57 35.387	2.9828	N. 14 25 52.84	19.296
γ Piscium - - - -	4.5	23 32 32.692	3.0840	N. 4 50 46.01	19.462
γ Cephei - - - -	3.4	23 33 28.313	+ 2.3919	N. 76 49 43.85	+ 20.074

FORMULÆ OF REDUCTION.

ACCORDING TO THE LATE PROFESSOR BESSEL.

1.—Adopting the Notation and Coefficients employed by the late Mr. Baily, in his Introduction to the Catalogue of Stars of the British Association.

$$\begin{aligned}
 A &= -18.7322 \cos \odot \\
 B &= -20.4200 \sin \odot \\
 C &= t - 0.02492 \sin 2 \odot - 0.34344 \sin \oslash + 0.00413 \sin 2 \oslash - 0.004 \sin 2 \zeta \\
 D &= -0.54470 \cos 2 \odot - 9.25000 \cos \oslash + 0.09030 \cos 2 \oslash - 0.090 \cos 2 \zeta \\
 a &= \cos \alpha \sec \delta \\
 b &= \sin \alpha \sec \delta \\
 c &= 46.0591 + 20.0547 \sin \alpha \tan \delta \\
 d &= \cos \alpha \tan \delta \\
 a' &= \tan \omega \cos \delta - \sin \alpha \sin \delta \\
 b' &= \cos \alpha \sin \delta \\
 c' &= 20.0547 \cos \alpha \\
 d' &= -\sin \alpha
 \end{aligned}$$

Δc = the annual proper motion in Right Ascension, in arc.
 $\Delta c'$ = the annual proper motion in Declination.

Where t denotes the time from the beginning of the year, expressed in fractional parts of a year, \odot the Sun's and ζ the Moon's true longitude, \oslash the mean longitude of the Moon's node, and ω the obliquity of the Ecliptic, each for the time t ; α the mean Right Ascension, in arc, and δ the mean Declination for the beginning of the year. Then, for the time represented by t ,

$$\begin{aligned}
 \text{Apparent R.A., in arc,} &= \alpha + A a + B b + C c + D d + t \Delta c. \\
 \text{Apparent Dec.} &= \delta + A a' + B b' + C c' + D d' + t \Delta c'.
 \end{aligned}$$

2.—Using the same Notation and Coefficients, and assuming

$$\begin{aligned}
 46.0591 C &= f & B &= h \cos H \\
 20.0547 C &= g \cos G & A &= h \sin H \\
 D &= g \sin G & A \tan \omega &= i
 \end{aligned}$$

$$\begin{aligned}
 \text{Apparent R.A., in arc,} &= \alpha + f + t \Delta c \\
 &+ g \sin (G + \alpha) \tan \delta \\
 \text{Apparent Dec.} &= \delta + i \cos \delta + t \Delta c' \\
 &+ g \cos (G + \alpha)
 \end{aligned}$$

CONSTANTS FOR FACILITATING THE REDUCTION OF STARS.							
Day of the Month.	At Greenwich Mean Midnight.						
	<i>f</i>	<i>g</i>	<i>G</i>	<i>h</i>	<i>H</i>	<i>i</i>	
Jan.	1	- 7.29	+ 8.10	246 56	+20.36	350 2	- 1.53
	6	6.41	8.02	249 37	20.30	345 19	2.23
	11	5.56	7.97	252 20	20.21	340 34	2.92
	16	4.72	7.96	255 1	20.10	335 46	3.58
	21	- 3.92	+ 7.97	257 38	+19.98	330 56	- 4.21
	26	3.15	8.01	260 9	19.85	326 2	4.81
	31	2.41	8.08	262 32	19.70	321 3	5.38
	Feb. 5	1.71	8.16	264 46	19.54	316 1	5.89
	10	- 1.04	+ 8.25	266 50	+19.40	310 55	- 6.36
	15	- 0.41	8.35	268 46	19.26	305 45	6.79
	20	+ 0.19	8.45	270 33	19.13	300 31	7.15
	25	0.75	8.55	272 12	19.01	295 14	7.46
Mar.	1	+ 1.30	+ 8.65	273 45	+18.91	289 53	- 7.72
	6	1.82	8.73	275 13	18.83	284 30	7.91
	11	2.33	8.81	276 37	18.77	279 6	8.04
	16	2.83	8.88	277 59	18.74	273 41	8.12
	21	+ 3.33	+ 8.93	279 21	+18.73	268 17	- 8.13
	26	3.83	8.97	280 43	18.76	262 53	8.07
	31	4.34	9.00	282 6	18.80	257 32	7.97
	April 5	4.86	9.03	283 33	18.87	252 14	7.80
	10	+ 5.40	+ 9.05	285 3	+18.96	246 59	- 7.58
	15	5.96	9.07	286 38	19.07	241 48	7.29
	20	6.55	9.09	288 18	19.20	236 42	6.96
	25	7.17	9.11	290 3	19.33	231 42	6.58
May	30	+ 7.82	+ 9.14	291 52	+19.47	226 46	- 6.15
	5	8.51	9.19	293 46	19.61	221 54	5.69
	10	9.22	9.25	295 44	19.75	217 8	5.18
	15	9.97	9.33	297 43	19.89	212 27	4.63
	20	+10.75	+ 9.44	299 44	+20.01	207 50	- 4.05
	25	11.56	9.57	301 44	20.13	203 16	3.45
	30	12.39	9.72	303 42	20.23	198 46	2.83
	June 4	13.24	9.90	305 37	20.30	194 18	2.18
	9	+14.11	+10.11	307 26	+20.36	189 53	- 1.52
	14	14.99	10.34	309 10	20.40	185 29	0.85
	19	15.88	10.59	310 46	20.42	181 7	- 0.17
	24	16.77	10.86	312 15	20.41	176 44	+ 0.51
29	17.65	11.14	313 36	20.39	172 21	1.18	
July 4	+18.53	+11.44	314 49	+20.34	167 58	+ 1.84	

CONSTANTS FOR FACILITATING THE REDUCTION OF STARS.

of the month.	At Greenwich Mean Midnight.					
	<i>f</i>	<i>g</i>	<i>G</i>	<i>h</i>	<i>H</i>	<i>i</i>
	"	"	° ' "	"	° ' "	"
7. 4	+18.53	+11.44	314 49	+20.34	167 58	+ 1.84
9	19.39	11.75	315 55	20.27	163 32	2.49
14	20.23	12.07	316 53	20.18	159 4	3.13
19	21.05	12.39	317 43	20.07	154 34	3.73
24	+21.85	+12.71	318 28	+19.96	150 1	+ 4.33
29	22.61	13.02	319 7	19.83	145 23	4.89
5. 3	23.35	13.33	319 41	19.69	140 42	5.41
8	24.05	13.64	320 11	19.55	135 56	5.90
13	+24.73	+13.93	320 38	+19.41	131 6	+ 6.35
18	25.37	14.21	321 2	19.27	126 11	6.75
23	25.98	14.47	321 24	19.14	121 12	7.10
28	26.56	14.72	321 46	19.03	116 7	7.41
1. 2	+27.12	+14.96	322 7	+18.92	110 57	+ 7.67
7	27.66	15.19	322 28	18.84	105 45	7.87
12	28.18	15.40	322 50	18.78	100 29	8.01
17	28.69	15.60	323 13	18.75	95 11	8.10
22	+29.19	+15.78	323 39	+18.73	89 51	+ 8.13
27	29.70	15.96	324 6	18.75	84 30	8.10
2	30.21	16.13	324 36	18.78	79 9	8.01
7	30.72	16.30	325 9	18.85	73 49	7.86
12	+31.26	+16.47	325 44	+18.94	68 31	+ 7.65
17	31.82	16.64	326 22	19.04	63 15	7.38
22	32.40	16.82	327 2	19.16	58 2	7.05
27	33.02	17.00	327 44	19.30	52 52	6.67
1. 1	+33.66	+17.20	328 28	+19.44	47 46	+ 6.24
6	34.34	17.41	329 13	19.59	42 43	5.77
11	35.06	17.63	329 58	19.73	37 45	5.24
16	35.81	17.88	330 44	19 88	32 50	4.68
21	+36.60	+18.14	331 28	+20.01	27 59	+ 4.07
26	37.41	18.42	332 11	20.13	23 10	3.43
1	38.26	18.72	332 52	20.23	18 24	2.77
6	39.13	19.03	333 31	20.31	13 41	2.08
11	+40.01	+19.37	334 6	+20.37	9 0	+ 1.38
16	40.91	19.71	334 39	20.41	4 18	+ 0.67
21	41.81	20.07	335 7	20.42	359 37	- 0.07
26	42.72	20.43	335 33	20.40	354 57	0.78
31	+43.61	+20.80	335 54	+20.36	350 16	- 1.49

FIXED STARS, 1856.

APPARENT PLACES OF α URSÆ MINORIS (*Polaris*),
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	h m 1 6	° ' 88 32	h m 1 5	° ' 88 32	h m 1 5	° ' 88 32	h m 1 5	° ' 88 32	
1	33·46	49·8	67·42	49·9	47·84	44·8	39·00	36·0	1
2	32·61	49·9	66·63	49·8	47·33	44·6	38·96	35·7	2
3	31·77	50·0	65·84	49·7	46·83	44·3	38·94	35·4	3
4	30·93	50·1	65·05	49·6	46·34	44·0	38·94	35·1	4
5	30·09	50·1	64·27	49·4	45·87	43·8	38·96	34·8	5
6	29·25	50·2	63·49	49·3	45·42	43·5	{38·96}	{34·8}	6
7	28·41	50·3	62·72	49·2	44·99	43·2	39·07	33·8	7
8	27·56	50·3	61·96	49·1	44·57	43·0	39·15	33·5	8
9	26·71	50·4	61·22	48·9	44·16	42·7	39·25	33·2	9
10	25·86	50·5	60·49	48·8	43·75	42·4	39·37	32·9	10
11	25·01	50·5	59·76	48·7	43·35	42·1	39·50	32·6	11
12	24·16	50·6	59·03	48·5	42·99	41·9	39·64	32·3	12
13	23·30	50·6	58·32	48·4	42·65	41·6	39·79	32·0	13
14	22·45	50·6	57·62	48·2	42·32	41·3	39·97	31·8	14
15	21·59	50·7	56·93	48·0	42·00	41·0	40·16	31·5	15
16	20·73	50·7	56·24	47·8	41·69	40·7	40·37	31·2	16
17	19·88	50·7	55·56	47·6	41·40	40·5	40·60	30·9	17
18	19·03	50·7	54·89	47·4	41·13	40·2	40·84	30·6	18
19	18·19	50·6	54·23	47·2	40·87	39·9	41·09	30·3	19
20	17·34	50·6	53·59	47·0	40·63	39·6	41·36	30·0	20
21	16·50	50·6	52·97	46·8	40·40	39·3	41·65	29·7	21
22	15·66	50·6	52·35	46·6	40·19	39·0	41·95	29·5	22
23	14·82	50·5	51·74	46·4	40·00	38·7	42·26	29·2	23
24	13·98	50·5	51·14	46·2	39·82	38·4	42·57	28·9	24
25	13·15	50·4	50·55	46·0	39·66	38·1	42·90	28·7	25
26	12·32	50·4	49·98	45·8	39·52	37·8	43·26	28·4	26
27	11·49	50·3	49·42	45·5	39·39	37·5	43·64	28·1	27
28	10·66	50·2	48·88	45·3	39·28	37·2	44·03	27·8	28
29	9·84	50·2	48·35	45·1	39·18	36·9	44·43	27·5	29
30	9·03	50·1	47·84	44·8	39·10	36·6	44·83	27·3	30
31	8·22	50·0	- -	- -	39·04	36·3	45·25	27·1	31
32	7·42	49·9	- -	- -	39·00	36·0	- -	- -	32

APPARENT PLACES OF α URSÆ MINORIS (*Polaris*),
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^h ^m 1 5	^o ['] 88 32	^h ^m 1 6	^o ['] 88 32	^h ^m 1 6	^o ['] 88 32	^h ^m 1 6	^o ['] 88 32	
	^s	["]	^s	["]	^s	["]	^s	["]	
1	45·25	27·1	4·10	21·3	28·79	20·3	54·57	24·4	1
2	45·69	26·9	4·86	21·2	29·66	20·3	55·34	24·6	2
3	46·15	26·6	5·62	21·1	30·53	20·4	56·11	24·8	3
4	46·62	26·4	6·39	21·0	31·39	20·4	56·88	25·0	4
5	47·10	26·1	7·17	20·9	32·24	20·5	57·64	25·2	5
6	47·58	25·9	7·95	20·8	33·10	20·6	58·38	25·4	6
7	48·08	25·7	8·73	20·7	33·97	20·7	59·11	25·7	7
8	48·59	25·4	9·52	20·6	34·83	20·8	59·85	25·9	8
9	49·12	25·2	10·32	20·5	35·68	20·8	60·58	26·2	9
10	49·66	24·9	11·12	20·4	36·53	20·9	61·31	26·5	10
11	50·21	24·7	11·93	20·4	37·37	21·0	62·02	26·7	11
12	50·76	24·5	12·74	20·3	38·22	21·1	62·72	26·9	12
13	51·33	24·3	13·56	20·3	39·07	21·2	63·40	27·2	13
14	51·92	24·1	14·38	20·2	39·92	21·4	64·09	27·4	14
15	52·52	23·9	15·21	20·2	40·76	21·5	64·78	27·7	15
16	53·13	23·7	16·04	20·1	41·60	21·6	65·46	28·0	16
17	53·75	23·5	16·88	20·1	42·44	21·8	66·13	28·3	17
18	54·38	23·3	17·72	20·1	43·28	21·9	66·79	28·6	18
19	55·02	23·1	18·56	20·1	44·12	22·0	67·44	28·9	19
20	55·66	22·9	19·40	20·1	44·96	22·2	68·08	29·1	20
21	56·31	22·8	20·25	20·1	45·79	22·3	68·71	29·4	21
22	56·97	22·6	21·09	20·0	46·61	22·5	69·34	29·7	22
23	57·65	22·4	21·94	20·0	47·43	22·7	69·96	30·0	23
24	58·34	22·3	22·79	20·0	48·24	22·8	70·57	30·3	24
25	59·03	22·1	23·64	20·1	49·05	23·0	71·18	30·6	25
26	59·73	22·0	24·50	20·1	49·85	23·2	71·78	30·9	26
27	60·43	21·9	25·35	20·1	50·65	23·4	72·37	31·2	27
28	61·14	21·7	26·21	20·2	51·45	23·6	72·95	31·5	28
29	61·87	21·6	27·07	20·2	52·24	23·8	73·52	31·8	29
30	62·61	21·5	27·93	20·2	53·02	24·0	74·08	32·1	30
31	63·35	21·4	28·79	20·3	53·80	24·2	74·63	32·4	31
32	64·10	21·3	- -	- -	54·57	24·4	75·17	32·7	32

APPARENT PLACES OF α URSÆ MINORIS (*Polaris*),
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	h m	° '	h m	° '	h m	° '	h m	° '	
	1 7	88 32	1 7	88 32	1 7	88 32	1 6	88 33	
	s	"	s	"	s	"	s	"	
1	15'09	32'8	25'99	43'7	25'46	55'7	73'05	5'6	1
2	15'61	33'1	26'16	44'1	25'24	56'1	72'44	5'8	2
3	16'13	33'5	26'32	44'5	25'00	56'4	71'83	6'1	3
4	16'63	33'8	26'47	44'9	24'75	56'8	71'22	6'4	4
5	17'12	34'1	26'62	45'3	24'48	57'2	70'60	6'6	5
6	17'60	34'5	26'76	45'7	24'20	57'6	69'97	6'9	6
7	18'07	34'8	26'88	46'1	23'91	57'9	69'32	7'1	7
8	18'53	35'2	26'98	46'5	23'60	58'2	68'66	7'3	8
9	18'98	35'6	27'06	46'9	23'28	58'5	67'99	7'6	9
10	19'42	35'9	27'13	47'3	22'94	58'9	67'31	7'8	10
11	19'85	36'2	27'20	47'7	22'59	59'3	66'63	8'0	11
12	20'26	36'6	27'26	48'0	22'23	59'6	65'94	8'3	12
13	20'66	36'9	27'30	48'4	21'86	60'0	65'24	8'6	13
14	21'06	37'3	27'32	48'8	21'47	60'3	64'52	8'8	14
15	21'45	37'7	27'33	49'2	21'07	60'7	63'79	8'9	15
16	21'82	38'0	27'33	49'6	20'66	61'0	63'06	9'1	16
17	22'18	38'4	27'32	50'0	20'24	61'3	62'32	9'3	17
18	22'52	38'8	27'29	50'4	19'81	61'7	61'57	9'5	18
19	22'85	39'2	27'25	50'8	19'36	62'0	60'82	9'7	19
20	23'18	39'6	27'20	51'2	18'89	62'3	60'07	9'8	20
21	23'50	40'0	27'13	51'5	18'41	62'6	59'31	10'0	21
22	23'81	40'3	27'04	51'9	17'93	62'9	58'54	10'2	22
23	24'11	40'7	26'94	52'3	17'44	63'2	57'76	10'3	23
24	24'39	41'1	26'83	52'7	16'94	63'5	56'98	10'5	24
25	24'66	41'5	26'71	53'0	16'42	63'8	56'19	10'7	25
26	24'91	41'8	26'58	53'4	15'88	64'1	55'39	10'8	26
27	25'14	42'2	26'43	53'8	15'33	64'4	54'58	10'9	27
28	25'37	42'6	26'26	54'2	14'77	64'7	53'76	11'0	28
29	25'59	43'0	26'08	54'6	14'21	65'0	52'93	11'1	29
30	25'80	43'4	25'89	55'0	13'64	65'3	52'11	11'3	30
31	25'99	43'7	25'68	55'3	13'05	65'6	51'30	11'4	31
32	-	-	25'46	55'7	-	-	50'50	11'5	32

APPARENT PLACES OF δ URSÆ MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	h ^h m ^m	o ^o ' ' /	h ^h m ^m	o ^o ' ' /	h ^h m ^m	o ^o ' ' /	h ^h m ^m	o ^o ' ' /	
	18 18	86 35	18 18	86 35	18 18	86 35	18 18	86 35	
	s	"	s	"	s	"	s	"	
1	27 ^s .34	50 ["] .6	29 ^s .99	40 ["] .6	37 ^s .69	34 ["] .3	48 ^s .43	32 ["] .8	1
2	27 ^s .32	50 ["] .3	30 ^s .19	40 ["] .3	38 ^s .01	34 ["] .1	48 ^s .78	32 ["] .8	2
3	27 ^s .30	50 ["] .0	30 ^s .39	40 ["] .0	38 ^s .34	34 ["] .0	49 ^s .12	32 ["] .9	3
4	27 ^s .28	49 ["] .6	30 ^s .61	39 ["] .7	38 ^s .67	33 ["] .9	49 ^s .46	33 ["] .0	4
5	27 ^s .27	49 ["] .3	30 ^s .81	39 ["] .4	39 ^s .00	33 ["] .7	49 ^s .80	33 ["] .1	5
6	27 ^s .28	48 ["] .9	31 ^s .02	39 ["] .2	39 ^s .34	33 ["] .6	50 ^s .14	33 ["] .2	6
7	27 ^s .30	48 ["] .6	31 ^s .24	38 ["] .9	39 ^s .68	33 ["] .5	50 ^s .48	33 ["] .3	7
8	27 ^s .33	48 ["] .2	31 ^s .47	38 ["] .7	40 ^s .02	33 ["] .4	50 ^s .82	33 ["] .3	8
9	27 ^s .36	47 ["] .9	31 ^s .71	38 ["] .5	40 ^s .36	33 ["] .3	51 ^s .15	33 ["] .4	9
10	27 ^s .39	47 ["] .6	31 ^s .95	38 ["] .2	40 ^s .71	33 ["] .2	51 ^s .48	33 ["] .6	10
11	27 ^s .44	47 ["] .3	32 ^s .19	37 ["] .9	41 ^s .05	33 ["] .2	51 ^s .81	33 ["] .7	11
12	27 ^s .49	46 ["] .9	32 ^s .44	37 ["] .7	41 ^s .40	33 ["] .1	52 ^s .13	33 ["] .8	12
13	27 ^s .55	46 ["] .6	32 ^s .70	37 ["] .4	41 ^s .75	33 ["] .0	52 ^s .45	34 ["] .0	13
14	27 ^s .62	46 ["] .3	32 ^s .96	37 ["] .2	42 ^s .10	33 ["] .0	52 ^s .77	34 ["] .1	14
15	27 ^s .69	45 ["] .9	33 ^s .22	37 ["] .0	42 ^s .45	32 ["] .9	53 ^s .08	34 ["] .2	15
16	27 ^s .77	45 ["] .6	33 ^s .48	36 ["] .8	42 ^s .80	32 ["] .8	53 ^s .40	34 ["] .3	16
17	27 ^s .86	45 ["] .3	33 ^s .76	36 ["] .6	43 ^s .15	32 ["] .8	53 ^s .71	34 ["] .4	17
18	27 ^s .96	44 ["] .9	34 ^s .04	36 ["] .4	43 ^s .50	32 ["] .7	54 ^s .02	34 ["] .6	18
19	28 ^s .06	44 ["] .6	34 ^s .32	36 ["] .2	43 ^s .85	32 ["] .7	54 ^s .32	34 ["] .7 ₂	19
20	28 ^s .17	44 ["] .3	34 ^s .61	36 ["] .0	44 ^s .20	32 ["] .6	54 ^s .61	34 ["] .9	20
21	28 ^s .28	43 ["] .9	34 ^s .90	35 ["] .8	44 ^s .56	32 ["] .6	54 ^s .90	35 ["] .1	21
22	28 ^s .40	43 ["] .6	35 ^s .20	35 ["] .6	44 ^s .92	32 ["] .6	55 ^s .19	35 ["] .3	22
23	28 ^s .53	43 ["] .3	35 ^s .50	35 ["] .4	45 ^s .27	32 ["] .6	55 ^s .48	35 ["] .4	23
24	28 ^s .67	43 ["] .0	35 ^s .80	35 ["] .2	45 ^s .62	32 ["] .6	55 ^s .77	35 ["] .6	24
25	28 ^s .82	42 ["] .7	36 ^s .11	35 ["] .0	45 ^s .0 ⁻		05	35 ["] .7	25
26	28 ^s .97	42 ["] .4	36 ^s .42	34 ["] .8	46		33		26
27	29 ^s .12	42 ["] .1	36 ^s .73	34 ["] .7	4 ^f		60		27
28	29 ^s .27	41 ["] .8	37 ^s .05	34 ["] .5					
29	29 ^s .44	41 ["] .5	37 ^s .37	34 ["] .4					
30	29 ^s .62	41 ["] .2	37 ^s .69	34 ["] .3					
31	29 ^s .80	40 ["] .9	-	-					
32	29 ^s .99	40 ["] .6	-	-					

APPARENT PLACES of δ URSÆ MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^h 18 ^m 18	[°] 86 ['] 35	^h 18 ^m 19	[°] 86 ['] 35	^h 18 ^m 18	[°] 86 ['] 35	^h 18 ^m 18	[°] 86 ['] 36	
	^s	^s	^s	^s	^s	^s	^s	^s	
1	57·63	37·0	2·85	45·3	62·31	54·8	56·00	3·7	1
2	57·89	37·2	2·93	45·6	62·18	55·1	55·71	4·0	2
3	58·14	37·4	3·00	45·9	62·06	55·4	55·42	4·2	3
4	58·38	37·6	3·06	46·2	61·94	55·7	55·12	4·4	4
5	58·62	37·9	3·12	46·5	61·81	56·0	54·82	4·7	5
6	58·85	38·1	3·17	46·8	61·66	56·3	54·51	4·9	6
7	59·07	38·4	3·21	47·1	61·51	56·6	54·20	5·1	7
8	59·29	38·6	3·24	47·5	61·35	57·0	53·89	5·4	8
9	59·50	38·8	3·27	47·8	61·19	57·3	53·57	5·6	9
10	59·71	39·0	3·29	48·1	61·03	57·6	53·25	5·8	10
11	59·91	39·3	3·31	48·4	60·86	57·9	52·92	6·0	11
12	60·11	39·6	3·32	48·7	60·68	58·2	52·59	6·2	12
13	60·30	39·9	3·33	49·0	60·50	58·5	52·25	6·4	13
14	60·49	40·1	3·32	49·4	60·31	58·8	51·91	6·6	14
15	60·67	40·4	3·31	49·7	60·11	59·1	51·57	6·8	15
16	60·84	40·7	3·29	50·0	59·91	59·4	51·23	7·0	16
17	61·01	41·0	3·26	50·3	59·70	59·6	50·88	7·2	17
18	61·18	41·2	3·23	50·7	59·49	59·9	50·52	7·4	18
19	61·34	41·4	3·20	51·0	59·28	60·2	50·16	7·6	19
20	61·49	41·7	3·17	51·3	59·06	60·5	49·79	7·8	20
21	61·64	42·0	3·13	51·6	58·83	60·8	49·42	8·0	21
22	61·78	42·3	3·07	51·9	58·60	61·1	49·06	8·1*	22
23	61·91	42·6	3·00	52·3	58·36	61·3	48·69	8·3	23
24	62·04	42·9	2·93	52·6	58·12	61·6	48·31	8·5	24
25	62·17	43·2	2·86	52·9	57·87	61·9	47·93	8·6	25
26	62·29	43·5	2·78	53·2	57·62	62·1	47·56	8·8	26
27	62·40	43·8	2·70	53·5	57·36	62·4	47·18	8·9	27
28	62·50	44·1	2·61	53·8	57·10	62·7	46·80	9·0	28
29	62·60	44·4	2·52	54·2	56·83	62·9	46·41	9·2	29
30	62·69	44·7	2·42	54·5	56·56	63·2	46·01	9·4	30
31	62·77	45·0	2·31	54·8	56·28	63·5	45·61	9·5	31
32	62·85	45·3	- -	- -	56·00	63·7	45·21	9·7	32

APPARENT PLACES OF δ URSÆ MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	^h ^m 18 18	^o ['] 86 36	^h ^m 18 18	^o ['] 86 36	^h ^m 18 18	^o ['] 86 36	^h ^m 18 18	^o ['] 86 35	
	^s	"	^s	"	^s	"	^s	"	
1	45'21	9'7	32'50	11'3	19'59	8'5	10'10	61'5	1
2	44'81	9'8	32'06	11'3	19'22	8'3	9'87	61'2	2
3	44'41	9'9	31'62	11'3	18'85	8'2	9'63	60'9	3
4	44'01	10'0	31'19	11'3	18'48	8'0	9'40	60'6	4
5	43'60	10'1	30'76	11'3	18'11	7'8	9'17	60'3	5
6	43'19	10'2	30'33	11'2	17'75	7'6	8'96	60'0	6
7	42'78	10'3	29'89	11'2	17'39	7'4	8'76	59'7	7
8	42'37	10'4	29'46	11'2	17'03	7'2	8'57	59'4	8
9	41'95	10'5	29'03	11'1	16'68	7'0	8'38	59'1	9
10	41'53	10'6	28'60	11'0	16'33	6'8	8'19	58'8	10
11	41'11	10'7	28'17	11'0	15'98	6'6	8'01	58'5	11
12	40'69	10'7	27'75	10'9	15'64	6'4	7'83	58'2	12
13	40'27	10'8	27'32	10'9	15'30	6'2	7'66	57'9	13
14	39'84	10'8	26'90	10'9	14'97	5'9	7'51	57'5	14
15	39'41	10'9	26'48	10'7	14'64	5'7	7'36	57'2	15
16	38'99	11'0	26'05	10'6	14'32	5'5	7'21	56'9	16
17	38'56	11'0	25'63	10'5	14'00	5'2	7'07	56'5	17
18	38'13	11'1	25'21	10'4	13'69	5'0	6'94	56'2	18
19	37'70	11'1	24'80	10'3	13'38	4'8	6'82	55'9	19
20	37'27	11'2	24'38	10'2	13'07	4'5	6'70	55'5	20
21	36'84	11'3	23'97	10'1	12'77	4'3	6'59	55'2	21
22	36'41	11'3	23'56	9'9	12'48	4'0	6'49	54'9	22
23	35'98	11'3	23'15	9'8	12'20	3'7	6'39	54'5	23
24	35'54	11'3	22'74	9'7	11'92	3'5	6'31	54'2	24
25	35'11	11'3	22'34	9'6	11'64	3'2	{6'23}	{53'8}	25
26	34'68	11'4	21'95	9'5	11'37	2'9	{6'16}	53'2	26
27	34'24	11'4	21'56	9'3	11'11	2'		52'9	27
28	33'81	11'4	21'16	9'1	10'85			52'5	
29	33'38	11'4	20'76	8'9	10'59			52'1	
30	32'94	11'4	20'36	8'8	10'31			51'9	
31	32'50	11'3	19'97	8'7	10'1				
32	-	-	19'59	8'5	-				

CONSTANTS FOR FACILITATING THE REDUCTION OF STARS.							
Day of the Month.	At Greenwich Mean Midnight.						
	<i>f</i>	<i>g</i>	<i>G</i>	<i>h</i>	<i>H</i>	<i>i</i>	
Jan.	1	- 7'29	+ 8'10	246 56	+20'36	350 2	- 1'33
	6	6'41	8'02	249 37	20'30	345 19	2'23
	11	5'56	7'97	252 20	20'21	340 34	2'92
	16	4'72	7'96	255 1	20'10	335 46	3'58
	21	- 3'92	+ 7'97	257 38	+19'98	330 56	- 4'21
Feb.	26	3'15	8'01	260 9	19'85	326 2	4'81
	31	2'41	8'08	262 32	19'70	321 3	5'38
	5	1'71	8'16	264 46	19'54	316 1	5'89
	10	- 1'04	+ 8'25	266 50	+19'40	310 55	- 6'36
	15	- 0'41	8'35	268 46	19'26	305 45	6'79
Mar.	20	+ 0'19	8'45	270 33	19'13	300 31	7'15
	25	0'75	8'55	272 12	19'01	295 14	7'46
	1	+1'30	+ 8'65	273 45	+18'91	289 53	- 7'72
	6	1'82	8'73	275 13	18'83	284 30	7'91
	11	2'33	8'81	276 37	18'77	279 6	8'04
April	16	2'83	8'88	277 59	18'74	273 41	8'12
	21	+ 3'33	+ 8'93	279 21	+18'73	268 17	- 8'13
	26	3'83	8'97	280 43	18'76	262 53	8'07
	31	4'34	9'00	282 6	18'80	257 32	7'97
	5	4'86	9'03	283 33	18'87	252 14	7'80
May	10	+ 5'40	+ 9'05	285 3	+18'96	246 59	- 7'58
	15	5'96	9'07	286 38	19'07	241 48	7'29
	20	6'55	9'09	288 18	19'20	236 42	6'96
	25	7'17	9'11	290 3	19'33	231 42	6'58
	30	+ 7'82	+ 9'14	291 52	+19'47	226 46	- 6'15
June	5	8'51	9'19	293 46	19'61	221 54	5'69
	10	9'22	9'25	295 44	19'75	217 8	5'18
	15	9'97	9'33	297 43	19'89	212 27	4'63
	20	+10'75	+ 9'44	299 44	+20'01	207 50	- 4'05
	25	11'56	9'57	301 44	20'13	203 16	3'45
June	30	12'39	9'72	303 42	20'23	198 46	2'83
	4	13'24	9'90	305 37	20'30	194 18	2'18
	9	+14'11	+10'11	307 26	+20'36	189 53	- 1'52
	14	14'99	10'34	309 10	20'40	185 29	0'85
	19	15'88	10'59	310 46	20'42	181 7	- 0'17
	24	16'77	10'86	312 15	20'41	176 44	+ 0'51
	29	17'65	11'14	313 36	20'39	172 21	1'18
		+18'53	+11'44	314 49	+20'34	167 58	+ 1'84

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Cassiopeæ.		β Ceti.		θ^1 Ceti.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. South.
	h m 0 32	° ' " 55 44	h m 0 36	° ' " 18 46	h m 1 16	° ' " 8 55
Jan. 1	20° 36' 00" S	62° 9' 00" "	21° 16' 00" S	50° 3' 00" "	49° 35' 00" S	45° 3' 00" "
11	20° 08' 00" S	62° 4' 00" "	21° 04' 00" S	50° 7' 00" "	49° 24' 00" S	45° 9' 00" "
21	19° 81' 00" S	61° 5' 00" "	20° 93' 00" S	50° 8' 00" "	49° 12' 00" S	46° 4' 00" "
31	19° 54' 00" S	60° 1' 00" "	20° 82' 00" S	50° 7' 00" "	49° 00' 00" S	46° 7' 00" "
	0' 23	1' 8	0' 09	0' 4	0' 11	0' 1
Feb. 10	19° 31' 00" S	58° 3' 00" "	20° 73' 00" S	50° 3' 00" "	48° 89' 00" S	46° 8' 00" "
20	19° 12' 00" S	56° 2' 00" "	20° 65' 00" S	49° 6' 00" "	48° 79' 00" S	46° 6' 00" "
Mar. 1	18° 97' 00" S	53° 9' 00" "	20° 60' 00" S	48° 7' 00" "	48° 71' 00" S	46° 3' 00" "
11	18° 88' 00" S	51° 4' 00" "	20° 58' 00" S	47° 5' 00" "	48° 65' 00" S	45° 7' 00" "
	0' 01	2' 5	0' 01	1' 4	0' 03	0' 9
21	18° 87' 00" S	48° 9' 00" "	20° 59' 00" S	46° 1' 00" "	48° 62' 00" S	44° 8' 00" "
31	18° 93' 00" S	46° 3' 00" "	20° 65' 00" S	44° 2' 00" "	48° 64' 00" S	43° 8' 00" "
Apr. 10	19° 07' 00" S	44° 2' 00" "	20° 74' 00" S	42° 2' 00" "	48° 69' 00" S	42° 3' 00" "
20	19° 28' 00" S	42° 3' 00" "	20° 88' 00" S	40° 1' 00" "	48° 79' 00" S	40° 7' 00" "
	0' 28	1' 5	0' 18	2' 2	0' 14	1' 7
30	19° 56' 00" S	40° 8' 00" "	21° 06' 00" S	37° 9' 00" "	48° 93' 00" S	39° 0' 00" "
May 10	19° 90' 00" S	39° 7' 00" "	21° 28' 00" S	35° 5' 00" "	49° 11' 00" S	37° 0' 00" "
20	20° 29' 00" S	39° 1' 00" "	21° 53' 00" S	33° 0' 00" "	49° 33' 00" S	34° 9' 00" "
30	20° 73' 00" S	39° 0' 00" "	21° 82' 00" S	30° 6' 00" "	49° 58' 00" S	32° 7' 00" "
	0' 47	0' 4	0' 31	2' 5	0' 28	2' 3
June 9	21° 20' 00" S	39° 4' 00" "	22° 13' 00" S	28° 1' 00" "	49° 86' 00" S	30° 4' 00" "
19	21° 69' 00" S	40° 2' 00" "	22° 46' 00" S	25° 8' 00" "	50° 17' 00" S	28° 2' 00" "
29	22° 18' 00" S	41° 5' 00" "	22° 79' 00" S	23° 7' 00" "	50° 49' 00" S	26° 0' 00" "
July 9	22° 66' 00" S	43° 3' 00" "	23° 12' 00" S	21° 8' 00" "	50° 81' 00" S	23° 9' 00" "
	0' 47	2' 2	0' 33	1' 6	0' 32	1' 9
19	23° 13' 00" S	45° 5' 00" "	23° 45' 00" S	20° 2' 00" "	51° 13' 00" S	22° 0' 00" "
29	23° 56' 00" S	48° 0' 00" "	23° 76' 00" S	18° 9' 00" "	51° 44' 00" S	20° 3' 00" "
Aug. 8	23° 95' 00" S	50° 8' 00" "	24° 05' 00" S	17° 9' 00" "	51° 74' 00" S	18° 9' 00" "
18	24° 30' 00" S	53° 9' 00" "	24° 30' 00" S	17° 2' 00" "	52° 01' 00" S	17° 8' 00" "
	0' 30	3' 2	0' 22	0' 3	0' 24	0' 9
28	24° 60' 00" S	57° 1' 00" "	24° 52' 00" S	16° 9' 00" "	52° 25' 00" S	16° 9' 00" "
Sept. 7	24° 85' 00" S	60° 3' 00" "	24° 71' 00" S	17° 0' 00" "	52° 46' 00" S	16° 4' 00" "
17	25° 03' 00" S	63° 6' 00" "	24° 85' 00" S	17° 4' 00" "	52° 64' 00" S	16° 2' 00" "
27	25° 16' 00" S	66° 9' 00" "	24° 95' 00" S	18° 0' 00" "	52° 78' 00" S	16° 3' 00" "
	0' 07	3' 2	0' 07	0' 9	0' 11	0' 4
Oct. 7	25° 23' 00" S	70° 1' 00" "	25° 02' 00" S	18° 9' 00" "	52° 89' 00" S	16° 7' 00" "
17	25° 25' 00" S	73° 1' 00" "	25° 05' 00" S	20° 0' 00" "	52° 96' 00" S	17° 3' 00" "
27	25° 21' 00" S	75° 9' 00" "	25° 04' 00" S	21° 3' 00" "	53° 00' 00" S	18° 0' 00" "
Nov. 6	25° 13' 00" S	78° 4' 00" "	25° 01' 00" S	22° 6' 00" "	53° 02' 00" S	18° 0' 00" "
	0' 13	2' 2	0' 06	1' 3	0' 02	
16	25° 00' 00" S	80° 6' 00" "	24° 95' 00" S	23° 9' 00" "	53° 00' 00" S	
26	24° 82' 00" S	82° 4' 00" "	24° 88' 00" S	25° 1' 00" "	52° 96' 00" S	
Dec. 6	24° 61' 00" S	83° 8' 00" "	24° 79' 00" S	26° 2' 00" "	52° 90' 00" S	
16	24° 38' 00" S	84° 6' 00" "	24° 69' 00" S	27° 2' 00" "	52° 82' 00" S	
	0' 26	0' 4	0' 12	0' 7		
26	24° 12' 00" S	85° 0' 00" "	24° 57' 00" S	27° 9' 00" "	52° 73' 00" S	
36	23° 84' 00" S	84° 8' 00" "	24° 46' 00" S	28° 3' 00" "	52° 67' 00" S	

FIXED STARS, 1856.

APPARENT PLACES OF α URSÆ MINORIS (*Polaris*),
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "	
	I 6	88 32	I 5	88 32	I 5	88 32	I 5	88 32	
1	33 ^s .46	49 ^s .8	67 ^s .42	49 ^s .9	47 ^s .84	44 ^s .8	39 ^s .00	36 ^s .0	1
2	32 ^s .61	49 ^s .9	66 ^s .63	49 ^s .8	47 ^s .33	44 ^s .6	38 ^s .96	35 ^s .7	2
3	31 ^s .77	50 ^s .0	65 ^s .84	49 ^s .7	46 ^s .83	44 ^s .3	38 ^s .94	35 ^s .4	3
4	30 ^s .93	50 ^s .1	65 ^s .05	49 ^s .6	46 ^s .34	44 ^s .0	38 ^s .94	35 ^s .1	4
5	30 ^s .09	50 ^s .1	64 ^s .27	49 ^s .4	45 ^s .87	43 ^s .8	38 ^s .96	34 ^s .8	5
6	29 ^s .25	50 ^s .2	63 ^s .49	49 ^s .3	45 ^s .42	43 ^s .5	{ 38.96 }	{ 34.8 }	6
7	28 ^s .41	50 ^s .3	62 ^s .72	49 ^s .2	44 ^s .99	43 ^s .2	39 ^s .07	33 ^s .8	7
8	27 ^s .56	50 ^s .3	61 ^s .96	49 ^s .1	44 ^s .57	43 ^s .0	39 ^s .15	33 ^s .5	8
9	26 ^s .71	50 ^s .4	61 ^s .22	48 ^s .9	44 ^s .16	42 ^s .7	39 ^s .25	33 ^s .2	9
10	25 ^s .86	50 ^s .5	60 ^s .49	48 ^s .8	43 ^s .75	42 ^s .4	39 ^s .37	32 ^s .9	10
11	25 ^s .01	50 ^s .5	59 ^s .76	48 ^s .7	43 ^s .35	42 ^s .1	39 ^s .50	32 ^s .6	11
12	24 ^s .16	50 ^s .6	59 ^s .03	48 ^s .5	42 ^s .99	41 ^s .9	39 ^s .64	32 ^s .3	12
13	23 ^s .30	50 ^s .6	58 ^s .32	48 ^s .4	42 ^s .65	41 ^s .6	39 ^s .79	32 ^s .0	13
14	22 ^s .45	50 ^s .6	57 ^s .62	48 ^s .2	42 ^s .32	41 ^s .3	39 ^s .97	31 ^s .8	14
15	21 ^s .59	50 ^s .7	56 ^s .93	48 ^s .0	42 ^s .00	41 ^s .0	40 ^s .16	31 ^s .5	15
16	20 ^s .73	50 ^s .7	56 ^s .24	47 ^s .8	41 ^s .69	40 ^s .7	40 ^s .37	31 ^s .2	16
17	19 ^s .88	50 ^s .7	55 ^s .56	47 ^s .6	41 ^s .40	40 ^s .5	40 ^s .60	30 ^s .9	17
18	19 ^s .03	50 ^s .7	54 ^s .89	47 ^s .4	41 ^s .13	40 ^s .2	40 ^s .84	30 ^s .6	18
19	18 ^s .19	50 ^s .6	54 ^s .23	47 ^s .2	40 ^s .87	39 ^s .9	41 ^s .09	30 ^s .3	19
20	17 ^s .34	50 ^s .6	53 ^s .59	47 ^s .0	40 ^s .63	39 ^s .6	41 ^s .36	30 ^s .0	20
21	16 ^s .50	50 ^s .6	52 ^s .97	46 ^s .8	40 ^s .40	39 ^s .3	41 ^s .65	29 ^s .7	21
22	15 ^s .66	50 ^s .6	52 ^s .35	46 ^s .6	40 ^s .19	39 ^s .0	41 ^s .95	29 ^s .5	22
23	14 ^s .82	50 ^s .5	51 ^s .74	46 ^s .4	40 ^s .00	38 ^s .7	42 ^s .26	29 ^s .2	23
24	13 ^s .98	50 ^s .5	51 ^s .14	46 ^s .2	39 ^s .82	38 ^s .4	42 ^s .57	28 ^s .9	24
25	13 ^s .15	50 ^s .4	50 ^s .55	46 ^s .0	39 ^s .66	38 ^s .1	42 ^s .90	28 ^s .7	25
26	12 ^s .32	50 ^s .4	49 ^s .98	45 ^s .8	39 ^s .52	37 ^s .8	43 ^s .26	28 ^s .4	26
27	11 ^s .49	50 ^s .3	49 ^s .42	45 ^s .5	39 ^s .39	37 ^s .5	43 ^s .64	28 ^s .1	27
28	10 ^s .66	50 ^s .2	48 ^s .88	45 ^s .3	39 ^s .28	37 ^s .2	44 ^s .03	27 ^s .8	28
29	9 ^s .84	50 ^s .2	48 ^s .35	45 ^s .1	39 ^s .18	36 ^s .9	44 ^s .43	27 ^s .5	29
30	9 ^s .03	50 ^s .1	47 ^s .84	44 ^s .8	39 ^s .10	36 ^s .6	44 ^s .83	27 ^s .3	30
31	8 ^s .22	50 ^s .0	- -	- -	39 ^s .04	36 ^s .3	45 ^s .25	27 ^s .1	31
?	7 ^s .42	49 ^s .9	- -	- -	39 ^s .00	36 ^s .0	- -	- -	32

FIXED STARS, 1856.

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APPARENT PLACES OF α URSÆ MINORIS (*Polaris*), FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	MAY.		JUNE.		JULY.		AUGUST.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "	
	1 5	88 32	1 6	88 32	1 6	88 32	1 6	88 32	
	s	"	s	"	s	"	s	"	
1	45.25	27.1	4.10	21.3	28.79	20.3	54.57	24.4	1
2	45.69	26.9	4.86	21.2	29.66	20.3	55.34	24.6	2
3	46.15	26.6	5.62	21.1	30.53	20.4	56.11	24.8	3
4	46.62	26.4	6.39	21.0	31.39	20.4	56.88	25.0	4
5	47.10	26.1	7.17	20.9	32.24	20.5	57.64	25.2	5
6	47.58	25.9	7.95	20.8	33.10	20.6	58.38	25.4	6
7	48.08	25.7	8.73	20.7	33.97	20.7	59.11	25.7	7
8	48.59	25.4	9.52	20.6	34.83	20.8	59.85	25.9	8
9	49.12	25.2	10.32	20.5	35.68	20.8	60.58	26.2	9
10	49.66	24.9	11.12	20.4	36.53	20.9	61.31	26.5	10
11	50.21	24.7	11.93	20.4	37.37	21.0	62.02	26.7	11
12	50.76	24.5	12.74	20.3	38.22	21.1	62.72	26.9	12
13	51.33	24.3	13.56	20.3	39.07	21.2	63.40	27.2	13
14	51.92	24.1	14.38	20.2	39.92	21.4	64.09	27.4	14
15	52.52	23.9	15.21	20.2	40.76	21.5	64.78	27.7	15
16	53.13	23.7	16.04	20.1	41.60	21.6	65.46	28.0	16
17	53.75	23.5	16.88	20.1	42.44	21.8	66.13	28.3	17
18	54.38	23.3	17.72	20.1	43.28	21.9	66.79	28.6	18
19	55.02	23.1	18.56	20.1	44.12	22.0	67.44	28.9	19
20	55.66	22.9	19.40	20.1	44.96	22.2	68.08	29.1	20
21	56.31	22.8	20.25	20.1	45.79	22.3	68.71	29.4	21
22	56.97	22.6	21.09	20.0	46.61	22.5	69.34	29.7	22
23	57.65	22.4	21.94	20.0	47.43	22.7	69.96	30.0	23
24	58.34	22.3	22.79	20.0	48.24	22.8	70.57	30.3	24
25	59.03	22.1	23.64	20.1	49.05	23.0	71.16	30.6	25
26	59.73	22.0	24.50	20.1	49.85	23.2	71.74	30.9	26
27	60.43	21.9	25.35	20.1	50.65	23.4	72.32	31.3	27
28	61.14	21.7	26.21	20.2	51.45	23.6	72.89	31.6	28
29	61.87	21.6	27.07	20.2	52.24	23.8	73.45	31.9	29
30	62.61	21.5	27.93	20.2	53.02	24.0	74.01	32.2	30
31	63.35	21.4	28.79	20.3	53.80	24.2	74.56	32.5	31
32	64.10	21.3	- -	- -	54.57	24.4	75.09	32.8	32

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH						
Day of the Month.	γ Eridani.		α Tauri. (Aldebaran)		α Auriga. (Capella)	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec.
	h m 3 51	° ' / 13 54	h m 4 27	° ' / 16 13	h m 5 6	° ' / 45
Jan. 1	19° 34' 0" 51	76° 5' 1" 54	40° 29' 0" 27	4° 2' 0" 13	4° 43' 0" 00	57° 0' 0" 00
11	19° 27' 0" 07	77° 9' 1" 4	40° 27' 0" 06	4° 0' 0" 2	4° 43' 0" 06	58° 0' 0" 00
21	19° 17' 0" 10	79° 0' 1" 1	40° 21' 0" 10	3° 8' 0" 2	4° 37' 0" 11	59° 0' 0" 00
31	19° 05' 0" 15	79° 9' 0" 6	40° 11' 0" 13	3° 6' 0" 2	4° 26' 0" 17	60° 0' 0" 00
Feb. 10	18° 90' 0" 15	80° 5' 0" 2	39° 98' 0" 15	3° 4' 0" 2	4° 09' 0" 20	61° 0' 0" 00
20	18° 73' 0" 17	80° 7' 0" 0	39° 83' 0" 16	3° 2' 0" 2	3° 89' 0" 23	62° 0' 0" 00
Mar. 1	18° 57' 0" 16	80° 7' 0" 3	39° 67' 0" 16	3° 0' 0" 2	3° 66' 0" 24	62° 0' 0" 00
11	18° 40' 0" 15	80° 4' 0" 5	39° 51' 0" 16	2° 8' 0" 2	3° 42' 0" 24	62° 0' 0" 00
21	18° 25' 0" 13	79° 9' 0" 9	39° 35' 0" 14	2° 6' 0" 2	3° 18' 0" 24	61° 0' 0" 00
31	18° 12' 0" 10	79° 0' 1" 2	39° 21' 0" 11	2° 4' 0" 1	2° 96' 0" 19	61° 0' 0" 00
Apr. 10	18° 02' 0" 06	77° 8' 1" 4	39° 10' 0" 08	2° 3' 0" 0	2° 77' 0" 15	60° 0' 0" 00
20	17° 96' 0" 02	76° 4' 1" 7	39° 02' 0" 03	2° 3' 0" 0	2° 62' 0" 10	59° 0' 0" 00
30	17° 94' 0" 02	74° 7' 1" 9	38° 99' 0" 01	2° 3' 0" 2	2° 52' 0" 04	58° 0' 0" 00
May 10	17° 96' 0" 08	72° 8' 2" 3	39° 00' 0" 06	2° 5' 0" 3	2° 48' 0" 03	56° 0' 0" 00
20	18° 04' 0" 12	70° 5' 2" 3	39° 06' 0" 12	2° 8' 0" 6	2° 51' 0" 08	55° 0' 0" 00
30	18° 16' 0" 16	68° 2' 2" 3	39° 18' 0" 15	3° 4' 0" 6	2° 59' 0" 16	54° 0' 0" 00
June 9	18° 32' 0" 20	65° 9' 2" 4	39° 33' 0" 19	4° 0' 0" 7	2° 75' 0" 21	52° 0' 0" 00
19	18° 52' 0" 24	63° 5' 2" 3	39° 52' 0" 23	4° 7' 0" 9	2° 96' 0" 26	51° 0' 0" 00
29	18° 76' 0" 26	61° 2' 2" 3	39° 75' 0" 26	5° 6' 0" 9	3° 22' 0" 30	50° 0' 0" 00
July 9	19° 02' 0" 28	58° 9' 2" 2	40° 01' 0" 29	6° 5' 0" 9	3° 52' 0" 34	50° 0' 0" 00
19	19° 30' 0" 30	56° 7' 1" 9	40° 30' 0" 30	7° 6' 0" 1	3° 86' 0" 38	49° 0' 0" 00
29	19° 60' 0" 31	54° 8' 1" 6	40° 60' 0" 31	8° 6' 0" 1	4° 24' 0" 40	48° 0' 0" 00
Aug. 8	19° 91' 0" 31	53° 2' 1" 4	40° 91' 0" 32	9° 7' 0" 1	4° 64' 0" 41	48° 0' 0" 00
18	20° 22' 0" 30	51° 8' 1" 0	41° 23' 0" 32	10° 7' 0" 9	5° 05' 0" 43	48° 0' 0" 00
28	20° 52' 0" 29	50° 8' 0" 6	41° 55' 0" 32	11° 6' 0" 8	5° 48' 0" 42	48° 0' 0" 00
Sept. 7	20° 81' 0" 28	50° 2' 0" 2	41° 87' 0" 31	12° 4' 0" 7	5° 90' 0" 42	49° 0' 0" 00
17	21° 09' 0" 27	50° 0' 0" 3	42° 18' 0" 30	13° 1' 0" 6	6° 33' 0" 42	49° 0' 0" 00
27	21° 36' 0" 24	50° 3' 0" 6	42° 48' 0" 28	13° 7' 0" 4	6° 75' 0" 41	50° 0' 0" 00
Oct. 7	21° 60' 0" 22	50° 9' 0" 9	42° 76' 0" 26	14° 1' 0" 3	7° 16' 0" 39	51° 0' 0" 00
17	21° 82' 0" 19	51° 8' 1" 2	43° 02' 0" 24	14° 4' 0" 1	7° 55' 0" 37	52° 0' 0" 00
27	22° 01' 0" 16	53° 0' 1" 5	43° 26' 0" 22	14° 5' 0" 1	7° 92' 0" 33	53° 0' 0" 00
Nov. 6	22° 17' 0" 13	54° 5' 1" 7	43° 48' 0" 19	14° 6' 0" 1	8° 25' 0" 30	54° 0' 0" 00
16	22° 30' 0" 09	56° 2' 1" 8	43° 67' 0" 16	14° 5' 0" 1	8° 55' 0" 26	56° 0' 0" 00
26	22° 39' 0" 06	58° 0' 1" 8	43° 83' 0" 12	14° 4' 0" 2	8° 81' 0" 21	57° 0' 0" 00
Dec. 6	22° 45' 0" 03	59° 8' 1" 7	43° 95' 0" 08	14° 2' 0" 2	9° 02' 0" 16	59° 0' 0" 00
16	22° 48' 0" 01	61° 5' 1" 6	44° 03' 0" 05	14° 0' 0" 2	9° 18' 0" 10	60° 0' 0" 00
26	22° 47' 0" 05	63° 1' 1" 5	44° 08' 0" 00	13° 8' 0" 2	9° 28' 0" 03	62° 0' 0" 00
36	22° 42' 0" 05	64° 6' 1" 5	44° 08' 0" 00	13° 6' 0" 2	9° 31' 0" 03	63° 0' 0" 00

APPARENT PLACES OF δ URSÆ MINORIS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		Day of the Month.
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	h ^h m ^m	° ' "	h ^h m ^m	° ' "	h ^h m ^m	° ' "	h ^h m ^m	° ' "	
	18 18	86 35	18 18	86 35	18 18	86 35	18 18	86 35	
	s	"	s	"	s	"	s	"	
1	27 ^s .34	50 ["] .6	29 ^s .99	40 ["] .6	37 ^s .69	34 ["] .3	48 ^s .43	32 ["] .8	1
2	27 ^s .32	50 ["] .3	30 ^s .19	40 ["] .3	38 ^s .01	34 ["] .1	48 ^s .78	32 ["] .8	2
3	27 ^s .30	50 ["] .0	30 ^s .39	40 ["] .0	38 ^s .34	34 ["] .0	49 ^s .12	32 ["] .9	3
4	27 ^s .28	49 ["] .6	30 ^s .61	39 ["] .7	38 ^s .67	33 ["] .9	49 ^s .46	33 ["] .0	4
5	27 ^s .27	49 ["] .3	30 ^s .81	39 ["] .4	39 ^s .00	33 ["] .7	49 ^s .80	33 ["] .1	5
6	27 ^s .28	48 ["] .9	31 ^s .02	39 ["] .2	39 ^s .34	33 ["] .6	50 ^s .14	33 ["] .2	6
7	27 ^s .30	48 ["] .6	31 ^s .24	38 ["] .9	39 ^s .68	33 ["] .5	50 ^s .48	33 ["] .3	7
8	27 ^s .33	48 ["] .2	31 ^s .47	38 ["] .7	40 ^s .02	33 ["] .4	50 ^s .82	33 ["] .3	8
9	27 ^s .36	47 ["] .9	31 ^s .71	38 ["] .5	40 ^s .36	33 ["] .3	51 ^s .15	33 ["] .4	9
10	27 ^s .39	47 ["] .6	31 ^s .95	38 ["] .2	40 ^s .71	33 ["] .2	51 ^s .48	33 ["] .6	10
11	27 ^s .44	47 ["] .3	32 ^s .19	37 ["] .9	41 ^s .05	33 ["] .2	51 ^s .81	33 ["] .7	11
12	27 ^s .49	46 ["] .9	32 ^s .44	37 ["] .7	41 ^s .40	33 ["] .1	52 ^s .13	33 ["] .8	12
13	27 ^s .55	46 ["] .6	32 ^s .70	37 ["] .4	41 ^s .75	33 ["] .0	52 ^s .45	34 ["] .0	13
14	27 ^s .62	46 ["] .3	32 ^s .96	37 ["] .2	42 ^s .10	33 ["] .0	52 ^s .77	34 ["] .1	14
15	27 ^s .69	45 ["] .9	33 ^s .22	37 ["] .0	42 ^s .45	32 ["] .9	53 ^s .08	34 ["] .2	15
16	27 ^s .77	45 ["] .6	33 ^s .48	36 ["] .8	42 ^s .80	32 ["] .8	53 ^s .40	34 ["] .3	16
17	27 ^s .86	45 ["] .3	33 ^s .76	36 ["] .6	43 ^s .15	32 ["] .8	53 ^s .71	34 ["] .4	17
18	27 ^s .96	44 ["] .9	34 ^s .04	36 ["] .4	43 ^s .50	32 ["] .7	54 ^s .02	34 ["] .6	18
19	28 ^s .06	44 ["] .6	34 ^s .32	36 ["] .2	43 ^s .85	32 ["] .7	54 ^s .32	34 ["] .7	19
20	28 ^s .17	44 ["] .3	34 ^s .61	36 ["] .0	44 ^s .20	32 ["] .6	54 ^s .61	34 ["] .9	20
21	28 ^s .28	43 ["] .9	34 ^s .90	35 ["] .8	44 ^s .56	32 ["] .6	54 ^s .90	35 ["] .1	21
22	28 ^s .40	43 ["] .6	35 ^s .20	35 ["] .6	44 ^s .92	32 ["] .6	55 ^s .19	35 ["] .3	22
23	28 ^s .53	43 ["] .3	35 ^s .50	35 ["] .4	45 ^s .27	32 ["] .6	55 ^s .48	35 ["] .4	23
24	28 ^s .67	43 ["] .0	35 ^s .80	35 ["] .2	45 ^s .62	32 ["] .6	55 ^s .77	35 ["] .6	24
25	28 ^s .82	42 ["] .7	36 ^s .11	35 ["] .0	45 ^s .98	32 ["] .6	56 ^s .05	35 ["] .7	25
26	28 ^s .97	42 ["] .4	36 ^s .42	34 ["] .8	46 ^s .33	32 ["] .6	56 ^s .33	35 ["] .9	26
27	29 ^s .12	42 ["] .1	36 ^s .73	34 ["] .7	46 ^s .68	32 ["] .7	56 ^s .60	36 ["] .1	27
28	29 ^s .27	41 ["] .8	37 ^s .05	34 ["] .5	47 ^s .03	32 ["] .7	56 ^s .86	36 ["] .3	28
29	29 ^s .44	41 ["] .5	37 ^s .37	34 ["] .4	47 ^s .38	32 ["] .7	57 ^s .12	36 ["] .5	29
30	29 ^s .62	41 ["] .2	37 ^s .69	34 ["] .3	47 ^s .73	32 ["] .8	57 ^s .37	36 ["] .8	30
31	29 ^s .80	40 ["] .9	- -	- -	48 ^s .08	32 ["] .8	57 ^s .63	37 ["] .0	31
32	29 ^s .99	40 ["] .6	- -	- -	48 ^s .43	32 ["] .8	- -	- -	32

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Leporis.		ε Orionis.		α Columbae.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. South.
	h m	° ' "	h m	° ' "	h m	° ' "
	5 26	17 55	5 28	1 17	5 34	34 8
Jan. 1	23 ^s .78 ^s 0 ^m .00	39 ^o .6 ^m 2 ^s .0	55 ^s .26 ^s 0 ^m .02	46 ^o .7 ^m 1 ^s .2	27 ^s .50 ^s 0 ^m .02	68 ^o .4 ^m 2 ^s .7
11	23 ^s .78 ^s 0 ^m .05	41 ^o .6 ^m 1 ^s .8	55 ^s .28 ^s 0 ^m .02	47 ^o .9 ^m 1 ^s .0	27 ^s .48 ^s 0 ^m .08	71 ^o .1 ^m 2 ^s .4
21	23 ^s .73 ^s 0 ^m .09	43 ^o .4 ^m 1 ^s .5	55 ^s .26 ^s 0 ^m .07	48 ^o .9 ^m 0 ^s .9	27 ^s .40 ^s 0 ^m .12	73 ^o .5 ^m 2 ^s .0
31	23 ^s .64 ^s 0 ^m .12	44 ^o .9 ^m 1 ^s .2	55 ^s .19 ^s 0 ^m .10	49 ^o .8 ^m 0 ^s .8	27 ^s .28 ^s 0 ^m .16	75 ^o .5 ^m 1 ^s .7
Feb. 10	23 ^s .52 ^s 0 ^m .15	46 ^o .1 ^m 0 ^s .8	55 ^s .09 ^s 0 ^m .13	50 ^o .6 ^m 0 ^s .5	27 ^s .12 ^s 0 ^m .20	77 ^o .2 ^m 1 ^s .2
20	23 ^s .37 ^s 0 ^m .18	46 ^o .9 ^m 0 ^s .6	54 ^s .96 ^s 0 ^m .16	51 ^o .1 ^m 0 ^s .4	26 ^s .92 ^s 0 ^m .22	78 ^o .4 ^m 0 ^s .7
Mar. 1	23 ^s .19 ^s 0 ^m .19	47 ^o .5 ^m 0 ^s .2	54 ^s .80 ^s 0 ^m .16	51 ^o .5 ^m 0 ^s .1	26 ^s .70 ^s 0 ^m .23	79 ^o .1 ^m 0 ^s .3
11	23 ^s .00 ^s 0 ^m .18	47 ^o .7 ^m 0 ^s .1	54 ^s .64 ^s 0 ^m .17	51 ^o .6 ^m 0 ^s .0	26 ^s .47 ^s 0 ^m .24	79 ^o .4 ^m 0 ^s .1
21	22 ^s .82 ^s 0 ^m .19	47 ^o .6 ^m 0 ^s .5	54 ^s .47 ^s 0 ^m .16	51 ^o .6 ^m 0 ^s .2	26 ^s .23 ^s 0 ^m .23	79 ^o .3 ^m 0 ^s .6
31	22 ^s .63 ^s 0 ^m .16	47 ^o .1 ^m 0 ^s .8	54 ^s .31 ^s 0 ^m .15	51 ^o .4 ^m 0 ^s .4	26 ^s .00 ^s 0 ^m .21	78 ^o .7 ^m 1 ^s .0
Apr. 10	22 ^s .47 ^s 0 ^m .14	46 ^o .3 ^m 1 ^s .1	54 ^s .16 ^s 0 ^m .12	51 ^o .0 ^m 0 ^s .6	25 ^s .79 ^s 0 ^m .18	77 ^o .7 ^m 1 ^s .4
20	22 ^s .33 ^s 0 ^m .10	45 ^o .2 ^m 1 ^s .4	54 ^s .04 ^s 0 ^m .08	50 ^o .4 ^m 0 ^s .8	25 ^s .61 ^s 0 ^m .15	76 ^o .3 ^m 1 ^s .8
30	22 ^s .23 ^s 0 ^m .06	43 ^o .8 ^m 1 ^s .6	53 ^s .96 ^s 0 ^m .05	49 ^o .6 ^m 1 ^s .0	25 ^s .46 ^s 0 ^m .11	74 ^o .5 ^m 2 ^s .1
May 10	22 ^s .17 ^s 0 ^m .03	42 ^o .2 ^m 1 ^s .9	53 ^s .91 ^s 0 ^m .01	48 ^o .6 ^m 1 ^s .1	25 ^s .35 ^s 0 ^m .06	72 ^o .4 ^m 2 ^s .4
20	22 ^s .14 ^s 0 ^m .02	40 ^o .3 ^m 2 ^s .1	53 ^s .90 ^s 0 ^m .04	47 ^o .5 ^m 1 ^s .3	25 ^s .29 ^s 0 ^m .02	70 ^o .0 ^m 2 ^s .6
30	22 ^s .16 ^s 0 ^m .07	38 ^o .2 ^m 2 ^s .2	53 ^s .94 ^s 0 ^m .08	46 ^o .2 ^m 1 ^s .4	25 ^s .27 ^s 0 ^m .03	67 ^o .4 ^m 2 ^s .9
June 9	22 ^s .23 ^s 0 ^m .12	36 ^o .0 ^m 2 ^s .6	54 ^s .02 ^s 0 ^m .13	44 ^o .8 ^m 1 ^s .6	25 ^s .30 ^s 0 ^m .09	64 ^o .5 ^m 3 ^s .2
19	22 ^s .35 ^s 0 ^m .14	33 ^o .4 ^m 2 ^s .4	54 ^s .15 ^s 0 ^m .16	43 ^o .2 ^m 1 ^s .6	25 ^s .39 ^s 0 ^m .13	61 ^o .3 ^m 3 ^s .0
29	22 ^s .49 ^s 0 ^m .19	31 ^o .0 ^m 2 ^s .3	54 ^s .31 ^s 0 ^m .20	41 ^o .6 ^m 1 ^s .6	25 ^s .52 ^s 0 ^m .18	58 ^o .3 ^m 2 ^s .9
July 9	22 ^s .68 ^s 0 ^m .22	28 ^o .7 ^m 2 ^s .3	54 ^s .51 ^s 0 ^m .22	40 ^o .0 ^m 1 ^s .6	25 ^s .70 ^s 0 ^m .21	55 ^o .4 ^m 1 ^s .8
19	22 ^s .90 ^s 0 ^m .24	26 ^o .4 ^m 2 ^s .1	54 ^s .73 ^s 0 ^m .24	38 ^o .4 ^m 1 ^s .4	25 ^s .91 ^s 0 ^m .24	52 ^o .6 ^m 2 ^s .5
29	23 ^s .14 ^s 0 ^m .27	24 ^o .3 ^m 1 ^s .8	54 ^s .97 ^s 0 ^m .27	37 ^o .0 ^m 1 ^s .4	26 ^s .15 ^s 0 ^m .27	50 ^o .1 ^m 2 ^s .3
Aug. 8	23 ^s .41 ^s 0 ^m .28	22 ^o .5 ^m 1 ^s .6	55 ^s .24 ^s 0 ^m .28	35 ^o .6 ^m 1 ^s .1	26 ^s .42 ^s 0 ^m .30	47 ^o .8 ^m 1 ^s .9
18	23 ^s .69 ^s 0 ^m .29	20 ^o .9 ^m 1 ^s .2	55 ^s .52 ^s 0 ^m .29	34 ^o .5 ^m 0 ^s .9	26 ^s .72 ^s 0 ^m .31	45 ^o .9 ^m 1 ^s .4
28	23 ^s .98 ^s 0 ^m .30	19 ^o .7 ^m 0 ^s .8	55 ^s .81 ^s 0 ^m .30	33 ^o .6 ^m 0 ^s .7	27 ^s .03 ^s 0 ^m .32	44 ^o .5 ^m 0 ^s .9
Sept. 7	24 ^s .28 ^s 0 ^m .30	18 ^o .9 ^m 0 ^s .4	56 ^s .11 ^s 0 ^m .29	32 ^o .9 ^m 0 ^s .3	27 ^s .35 ^s 0 ^m .33	43 ^o .6 ^m 0 ^s .4
17	24 ^s .58 ^s 0 ^m .30	18 ^o .5 ^m 0 ^s .1	56 ^s .40 ^s 0 ^m .30	32 ^o .6 ^m 0 ^s .1	27 ^s .68 ^s 0 ^m .32	43 ^o .2 ^m 0 ^s .1
27	24 ^s .88 ^s 0 ^m .29	18 ^o .6 ^m 0 ^s .6	56 ^s .70 ^s 0 ^m .29	32 ^o .5 ^m 0 ^s .2	28 ^s .00 ^s 0 ^m .32	43 ^o .4 ^m 0 ^s .7
Oct. 7	25 ^s .17 ^s 0 ^m .28	19 ^o .2 ^m 0 ^s .9	56 ^s .99 ^s 0 ^m .28	32 ^o .7 ^m 0 ^s .6	28 ^s .32 ^s 0 ^m .31	44 ^o .1 ^m 1 ^s .3
17	25 ^s .45 ^s 0 ^m .27	20 ^o .1 ^m 1 ^s .4	57 ^s .27 ^s 0 ^m .27	33 ^o .3 ^m 0 ^s .8	28 ^s .63 ^s 0 ^m .29	45 ^o .4 ^m 1 ^s .7
27	25 ^s .72 ^s 0 ^m .24	21 ^o .5 ^m 1 ^s .7	57 ^s .54 ^s 0 ^m .25	34 ^o .1 ^m 1 ^s .0	28 ^s .92 ^s 0 ^m .26	47 ^o .1 ^m 2 ^s .5
Nov. 6	25 ^s .96 ^s 0 ^m .22	23 ^o .2 ^m 2 ^s .0	57 ^s .79 ^s 0 ^m .23	35 ^o .1 ^m 1 ^s .3	29 ^s .18 ^s 0 ^m .23	49 ^o .3 ^m 2 ^s .5
16	26 ^s .18 ^s 0 ^m .18	25 ^o .2 ^m 2 ^s .2	58 ^s .02 ^s 0 ^m .20	36 ^o .4 ^m 1 ^s .3	29 ^s .41 ^s 0 ^m .19	51 ^o .8 ^m 2 ^s .8
26	26 ^s .36 ^s 0 ^m .15	27 ^o .4 ^m 2 ^s .2	58 ^s .22 ^s 0 ^m .16	37 ^o .7 ^m 1 ^s .4	29 ^s .60 ^s 0 ^m .15	54 ^o .6 ^m 3 ^s .0
Dec. 6	26 ^s .51 ^s 0 ^m .11	29 ^o .6 ^m 2 ^s .3	58 ^s .38 ^s 0 ^m .13	39 ^o .1 ^m 1 ^s .5	29 ^s .75 ^s 0 ^m .10	57 ^o .6 ^m 3 ^s .0
16	26 ^s .62 ^s 0 ^m .07	31 ^o .9 ^m 2 ^s .3	58 ^s .51 ^s 0 ^m .09	40 ^o .6 ^m 1 ^s .4	29 ^s .85 ^s 0 ^m .06	60 ^o .6 ^m 3 ^s .0
26	26 ^s .69 ^s 0 ^m .03	34 ^o .2 ^m 2 ^s .1	58 ^s .60 ^s 0 ^m .04	42 ^o .0 ^m 1 ^s .3	29 ^s .91 ^s 0 ^m .00	63 ^o .5 ^m 2 ^s .8
36	26 ^s .72 ^s 0 ^m .03	36 ^o .3 ^m 2 ^s .1	58 ^s .64 ^s 0 ^m .04	43 ^o .3 ^m 1 ^s .3	29 ^s .91 ^s 0 ^m .00	66 ^o .3 ^m 2 ^s .8

FIXED STARS, 1856.

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APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Orionis.			μ Geminorum.			α Argus. (Canopus)		
	R. A.	Dec. North.		R. A.	Dec. North.		R. A.	Dec. South.	
	h m	o	'	h m	o	'	h m	o	'
	5 47	7 22		6 14	22 35		6 20	52 36	
	^s	["]	^s	^s	["]	^s	["]	["]	["]
n. 1	23 ^s .42	40 ["] .0	15 ^s .80	5 ^s .6	47 ^s .42	61 ["] .0			
11	23 ^s .46	39 ["] .2	15 ^s .88	5 ^s .6	47 ^s .39	64 ["] .4			
21	23 ^s .46	38 ["] .6	15 ^s .91	5 ^s .8	47 ^s .29	67 ["] .5			
31	23 ^s .41	38 ["] .0	15 ^s .89	6 ^s .0	47 ^s .13	70 ["] .3			
	0 ^s .09	0 ["] .5	0 ^s .07	0 ^s .2	0 ["] .23	2 ["] .4			
b. 10	23 ^s .32	37 ["] .5	15 ^s .82	6 ^s .2	46 ^s .90	72 ["] .7			
20	23 ^s .20	37 ["] .2	15 ^s .71	6 ^s .4	46 ^s .63	74 ["] .7			
ar. 1	23 ^s .06	37 ["] .0	15 ^s .56	6 ^s .6	46 ^s .32	76 ["] .2			
11	22 ^s .90	36 ["] .9	15 ^s .40	6 ^s .7	45 ^s .98	77 ["] .2			
	0 ^s .17	0 ["] .0	0 ^s .17	0 ^s .2	0 ["] .36	0 ["] .4			
21	22 ^s .73	36 ["] .9	15 ^s .23	6 ^s .9	45 ^s .62	77 ["] .6			
31	22 ^s .57	37 ["] .0	15 ^s .05	6 ^s .9	45 ^s .26	77 ["] .6			
pr. 10	22 ^s .42	37 ["] .2	14 ^s .89	6 ^s .9	44 ^s .92	77 ["] .0			
20	22 ^s .29	37 ["] .5	14 ^s .75	6 ^s .9	44 ^s .60	75 ["] .9			
	0 ^s .09	0 ["] .4	0 ^s .11	0 ^s .1	0 ["] .29	1 ["] .6			
30	22 ^s .20	37 ["] .9	14 ^s .64	6 ^s .8	44 ^s .31	74 ["] .3			
ay 10	22 ^s .15	38 ["] .5	14 ^s .56	6 ^s .7	44 ^s .07	72 ["] .3			
20	22 ^s .13	39 ["] .1	14 ^s .53	6 ^s .6	43 ^s .87	70 ["] .0			
30	22 ^s .16	39 ["] .9	14 ^s .54	6 ^s .5	43 ^s .73	67 ["] .3			
	0 ^s .07	0 ["] .9	0 ^s .05	0 ^s .0	0 ["] .08	3 ["] .0			
ne 9	22 ^s .23	40 ["] .8	14 ^s .59	6 ^s .5	43 ^s .65	64 ["] .3			
19	22 ^s .35	41 ["] .9	14 ^s .69	6 ^s .5	43 ^s .63	61 ["] .2			
29	22 ^s .50	42 ["] .9	14 ^s .85	6 ^s .5	43 ^s .67	57 ["] .6			
ly 9	22 ^s .69	44 ["] .0	15 ^s .03	6 ^s .6	43 ^s .78	54 ["] .3			
	0 ^s .21	1 ["] .0	0 ^s .21	0 ^s .2	0 ["] .16	3 ["] .2			
19	22 ^s .90	45 ["] .0	15 ^s .24	6 ^s .8	43 ^s .94	51 ["] .1			
29	23 ^s .14	46 ["] .0	15 ^s .48	6 ^s .9	44 ^s .16	48 ["] .1			
ug. 8	23 ^s .41	47 ["] .0	15 ^s .75	7 ^s .1	44 ^s .43	45 ["] .3			
18	23 ^s .69	47 ["] .9	16 ^s .04	7 ^s .2	44 ^s .74	42 ["] .9			
	0 ^s .29	0 ["] .6	0 ^s .30	0 ^s .1	0 ["] .34	1 ["] .9			
28	23 ^s .98	48 ["] .5	16 ^s .34	7 ^s .3	45 ^s .08	41 ["] .0			
pt. 7	24 ^s .28	49 ["] .0	16 ^s .66	7 ^s .3	45 ^s .46	39 ["] .6			
17	24 ^s .58	49 ["] .3	16 ^s .98	7 ^s .3	45 ^s .85	38 ["] .7			
27	24 ^s .88	49 ["] .4	17 ^s .31	7 ^s .2	46 ^s .26	38 ["] .5			
	0 ^s .31	0 ["] .2	0 ^s .33		0 ["] .42	0 ["] .5			
st. 7	25 ^s .19	49 ["] .2	17 ^s .64		68	39 ["] .0			
17	25 ^s .48	48 ["] .8	17 ^s .97		08	40 ["] .0			
27	25 ^s .77	48 ["] .2	18 ^s .30		47	41 ["] .7			
ov. 6	26 ^s .03	47 ["] .5	18 ^s .61		83	43 ["] .9			
	0 ^s .25	0 ["] .9			0 ["] .32	2 ["] .7			
16	26 ^s .28	46 ["] .6	18		15				
26	26 ^s .50	45 ["] .7	19		42				
c. 6	26 ^s .69	44 ["] .7	19		54				
16	26 ^s .85	43 ["] .7	19		17				
	0 ^s .11	1 ["] .0							
26	26 ^s .96	42 ["] .7	19						
36	27 ^s .04	41 ["] .9							

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.						
Day of the Month.	51 (Hev.) Cephei.		α Canis Majoris. (Sirius)		ε Canis Majoris.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. S.
	6 ^h 31 ^m	87° 14'	6 ^h 38 ^m	16° 31'	6 ^h 52 ^m	28° 4'
Jan. 1	60° 18 ^s	73° 7 ^s	49° 24 ^s	13° 3 ^s	59° 13 ^s	38° 1 ^s
11	60° 60 ^s	77° 0 ^s	49° 31 ^s	15° 6 ^s	59° 20 ^s	41° 0 ^s
21	60° 11 ^s	80° 2 ^s	49° 33 ^s	17° 7 ^s	59° 22 ^s	43° 6 ^s
31	58° 73 ^s	83° 2 ^s	49° 30 ^s	19° 6 ^s	59° 18 ^s	46° 0 ^s
Feb. 10	56° 53 ^s	85° 9 ^s	49° 22 ^s	21° 2 ^s	59° 10 ^s	48° 2 ^s
20	53° 63 ^s	88° 2 ^s	49° 11 ^s	22° 6 ^s	58° 97 ^s	50° 0 ^s
Mar. 1	50° 15 ^s	90° 0 ^s	48° 97 ^s	23° 6 ^s	58° 80 ^s	51° 4 ^s
11	46° 25 ^s	91° 3 ^s	48° 80 ^s	24° 3 ^s	58° 61 ^s	52° 4 ^s
21	42° 11 ^s	91° 9 ^s	48° 61 ^s	24° 6 ^s	58° 41 ^s	53° 0 ^s
31	37° 91 ^s	92° 0 ^s	48° 43 ^s	24° 6 ^s	58° 20 ^s	53° 2 ^s
Apr. 10	33° 81 ^s	91° 5 ^s	48° 25 ^s	24° 4 ^s	57° 99 ^s	53° 0 ^s
20	29° 99 ^s	90° 4 ^s	48° 09 ^s	23° 8 ^s	57° 79 ^s	52° 4 ^s
30	26° 59 ^s	88° 8 ^s	47° 95 ^s	22° 9 ^s	57° 62 ^s	51° 4 ^s
May 10	23° 72 ^s	86° 7 ^s	47° 83 ^s	21° 7 ^s	57° 47 ^s	50° 0 ^s
20	21° 51 ^s	84° 2 ^s	47° 76 ^s	20° 3 ^s	57° 36 ^s	48° 4 ^s
30	20° 00 ^s	81° 5 ^s	47° 72 ^s	18° 7 ^s	57° 29 ^s	46° 4 ^s
June 9	19° 27 ^s	78° 6 ^s	47° 71 ^s	16° 9 ^s	57° 25 ^s	44° 2 ^s
19	19° 32 ^s	75° 5 ^s	47° 75 ^s	14° 9 ^s	57° 26 ^s	41° 8 ^s
29	20° 28 ^s	72° 1 ^s	47° 83 ^s	12° 9 ^s	57° 31 ^s	39° 3 ^s
July 9	21° 97 ^s	69° 1 ^s	47° 96 ^s	10° 6 ^s	57° 41 ^s	36° 4 ^s
19	24° 36 ^s	66° 2 ^s	48° 11 ^s	8° 5 ^s	57° 54 ^s	33° 9 ^s
29	27° 44 ^s	63° 5 ^s	48° 30 ^s	6° 6 ^s	57° 71 ^s	31° 4 ^s
Aug. 8	31° 12 ^s	61° 1 ^s	48° 51 ^s	4° 8 ^s	57° 91 ^s	29° 1 ^s
18	35° 34 ^s	58° 9 ^s	48° 74 ^s	3° 2 ^s	58° 14 ^s	27° 1 ^s
28	40° 00 ^s	57° 2 ^s	49° 00 ^s	2° 0 ^s	58° 40 ^s	25° 5 ^s
Sept. 7	45° 04 ^s	55° 8 ^s	49° 27 ^s	1° 1 ^s	58° 67 ^s	24° 2 ^s
17	50° 33 ^s	54° 8 ^s	49° 56 ^s	0° 6 ^s	58° 97 ^s	23° 4 ^s
27	55° 79 ^s	54° 3 ^s	49° 85 ^s	0° 5 ^s	59° 28 ^s	23° 1 ^s
Oct. 7	61° 31 ^s	54° 2 ^s	50° 15 ^s	0° 9 ^s	59° 60 ^s	23° 4 ^s
17	66° 78 ^s	54° 7 ^s	50° 46 ^s	1° 7 ^s	59° 92 ^s	24° 1 ^s
27	72° 07 ^s	55° 6 ^s	50° 76 ^s	3° 0 ^s	60° 24 ^s	25° 4 ^s
Nov. 6	77° 09 ^s	57° 1 ^s	51° 04 ^s	4° 6 ^s	60° 55 ^s	27° 2 ^s
16	81° 67 ^s	58° 9 ^s	51° 31 ^s	6° 6 ^s	60° 84 ^s	29° 4 ^s
26	85° 72 ^s	61° 2 ^s	51° 56 ^s	8° 8 ^s	61° 10 ^s	31° 9 ^s
Dec. 6	89° 12 ^s	62° 8 ^s	51° 78 ^s	11° 1 ^s	61° 33 ^s	34° 7 ^s
16	91° 76 ^s	66° 7 ^s	51° 97 ^s	13° 6 ^s	61° 53 ^s	37° 6 ^s
26	93° 57 ^s	69° 8 ^s	52° 11 ^s	16° 0 ^s	61° 68 ^s	40° 6 ^s
36	94° 49 ^s	73° 0 ^s	52° 20 ^s	18° 4 ^s	61° 78 ^s	43° 5 ^s

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β Geminorum.		α ² Geminorum. (Castor)		α Canis Minoris. (Procyon)	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	h m 7 11	° ′ 22 14	h m 7 25	° ′ 32 11	h m 7 31	° ′ 5 35
Jan. 1	32° 14' 0" 0.14	41° 1' 0" 0.1	25° 43' 0" 0.17	63° 4' 0" 0.4	46° 50' 0" 0.14	32° 8' 0" 0.12
11	32° 28' 0" 0.09	41° 0' 0" 0.0	25° 60' 0" 0.11	63° 8' 0" 0.6	46° 64' 0" 0.10	31° 6' 0" 0.11
21	32° 37' 0" 0.03	41° 0' 0" 0.2	25° 71' 0" 0.05	64° 4' 0" 0.8	46° 74' 0" 0.04	30° 5' 0" 0.9
31	32° 40' 0" 0.02	41° 2' 0" 0.2	25° 76' 0" 0.01	65° 2' 0" 0.8	46° 78' 0" 0.01	29° 6' 0" 0.7
Feb. 10	32° 38' 0" 0.06	41° 4' 0" 0.4	25° 75' 0" 0.06	66° 0' 0" 0.8	46° 77' 0" 0.05	28° 9' 0" 0.6
20	32° 32' 0" 0.11	41° 8' 0" 0.3	25° 69' 0" 0.11	66° 8' 0" 0.8	46° 72' 0" 0.09	28° 3' 0" 0.4
Mar. 1	32° 21' 0" 0.14	42° 1' 0" 0.4	25° 58' 0" 0.14	67° 6' 0" 0.7	46° 63' 0" 0.12	27° 9' 0" 0.2
11	32° 07' 0" 0.16	42° 5' 0" 0.3	25° 44' 0" 0.17	68° 3' 0" 0.6	46° 51' 0" 0.15	27° 7' 0" 0.1
21	31° 91' 0" 0.17	42° 8' 0" 0.2	25° 27' 0" 0.18	68° 9' 0" 0.5	46° 36' 0" 0.16	27° 6' 0" 0.1
31	31° 74' 0" 0.16	43° 0' 0" 0.3	25° 09' 0" 0.19	69° 4' 0" 0.3	46° 20' 0" 0.15	27° 7' 0" 0.1
Apr. 10	31° 58' 0" 0.16	43° 3' 0" 0.1	24° 90' 0" 0.17	69° 7' 0" 0.1	46° 05' 0" 0.15	27° 8' 0" 0.3
20	31° 42' 0" 0.14	43° 4' 0" 0.1	24° 73' 0" 0.16	69° 8' 0" 0.0	45° 90' 0" 0.14	28° 1' 0" 0.4
30	31° 28' 0" 0.10	43° 5' 0" 0.1	24° 57' 0" 0.13	69° 8' 0" 0.2	45° 76' 0" 0.11	28° 5' 0" 0.4
May 10	31° 18' 0" 0.08	43° 6' 0" 0.0	24° 44' 0" 0.09	69° 6' 0" 0.3	45° 65' 0" 0.09	28° 9' 0" 0.6
20	31° 10' 0" 0.04	43° 6' 0" 0.0	24° 35' 0" 0.05	69° 3' 0" 0.5	45° 56' 0" 0.05	29° 5' 0" 0.6
30	31° 06' 0" 0.01	43° 6' 0" 0.1	24° 30' 0" 0.01	68° 8' 0" 0.5	45° 51' 0" 0.02	30° 1' 0" 0.7
June 9	31° 07' 0" 0.04	43° 5' 0" 0.1	24° 29' 0" 0.03	68° 3' 0" 0.6	45° 49' 0" 0.02	30° 8' 0" 0.7
19	31° 11' 0" 0.08	43° 4' 0" 0.1	24° 32' 0" 0.07	67° 7' 0" 0.7	45° 51' 0" 0.05	31° 5' 0" 0.8
29	31° 19' 0" 0.14	43° 3' 0" 0.1	24° 39' 0" 0.11	67° 0' 0" 0.7	45° 56' 0" 0.08	32° 3' 0" 0.8
July 9	31° 33' 0" 0.16	43° 2' 0" 0.1	24° 50' 0" 0.17	66° 3' 0" 0.8	45° 64' 0" 0.13	33° 1' 0" 0.8
19	31° 49' 0" 0.19	43° 1' 0" 0.1	24° 67' 0" 0.19	65° 5' 0" 0.8	45° 77' 0" 0.16	33° 9' 0" 0.7
29	31° 68' 0" 0.22	43° 0' 0" 0.2	24° 86' 0" 0.22	64° 7' 0" 0.8	45° 93' 0" 0.18	34° 6' 0" 0.6
Aug. 8	31° 90' 0" 0.24	42° 8' 0" 0.2	25° 08' 0" 0.26	63° 9' 0" 0.8	46° 11' 0" 0.20	35° 2' 0" 0.5
18	32° 14' 0" 0.27	42° 6' 0" 0.3	25° 34' 0" 0.28	63° 1' 0" 0.8	46° 31' 0" 0.23	35° 7' 0" 0.3
28	32° 41' 0" 0.28	42° 3' 0" 0.3	25° 62' 0" 0.30	62° 3' 0" 0.8	46° 54' 0" 0.25	36° 0' 0" 0.1
Sept. 7	32° 69' 0" 0.31	42° 0' 0" 0.5	25° 92' 0" 0.32	61° 5' 0" 0.8	46° 79' 0" 0.26	36° 1' 0" 0.1
17	33° 00' 0" 0.31	41° 5' 0" 0.5	26° 24' 0" 0.34	60° 7' 0" 0.8	47° 05' 0" 0.28	36° 0' 0" 0.3
27	33° 31' 0" 0.33	41° 0' 0" 0.6	26° 58' 0" 0.35	59° 9' 0" 0.8	47° 33' 0" 0.30	35° 7' 0" 0.5
Oct. 7	33° 64' 0" 0.34	40° 4' 0" 0.7	27° 17' 0" 0.35	59° 1' 0" 0.8	47° 63' 0" 0.31	35° 2' 0" 0.8
17	33° 98' 0" 0.34	39° 7' 0" 0.7	27° 36' 0" 0.35	58° 3' 0" 0.7	47° 94' 0" 0.31	34° 4' 0" 1.0
27	34° 32' 0" 0.33	39° 0' 0" 0.7	27° 56' 0" 0.35	57° 6' 0" 0.6	48° 25' 0" 0.32	33° 4' 0" 1.3
Nov. 6	34° 65' 0" 0.33	38° 3' 0" 0.7	28° 16' 0" 0.35	56° 9' 0" 0.6	48° 57' 0" 0.31	32° 1' 0" 1.3
16	34° 98' 0" 0.31	37° 6' 0" 0.7	28° 36' 0" 0.35	55° 12' 0" 0.6	48° 88' 0" 0.29	30° 8' 0" 1.5
26	35° 29' 0" 0.29	36° 9' 0" 0.7	28° 56' 0" 0.35	53° 15' 0" 0.6	48° 17' 0" 0.27	29° 3' 0" 1.5
Dec. 6	35° 58' 0" 0.25	35° 12' 0" 0.7	29° 16' 0" 0.35	51° 18' 0" 0.6	48° 14' 0" 0.25	27° 8' 0" 1.6
16	35° 83' 0" 0.21	34° 15' 0" 0.7	29° 36' 0" 0.35	49° 21' 0" 0.6	48° 2' 0" 0.21	26° 2' 0" 1.4
26	36° 04' 0" 0.17	33° 18' 0" 0.7	29° 56' 0" 0.35	47° 24' 0" 0.6	48° 1' 0" 0.17	24° 8' 0" 1.3
36	36° 21' 0" 0.13	32° 21' 0" 0.7	30° 16' 0" 0.35	45° 27' 0" 0.6	48° 0' 0" 0.13	23° 1' 0" 1.3

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Leporis.		ε Orionis.		α Columbae.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. South.
	h m 5 26	° ' " 17 55	h m 5 28	° ' " 1 17	h m 5 34	° ' " 34 8
Jan. 1	23 ^s .78 ^s 0 ^s .00	39 ^s .6 ^s 2 ^s .0	55 ^s .26 ^s 0 ^s .02	46 ^s .7 ^s 1 ^s .2	27 ^s .50 ^s 0 ^s .02	68 ^s .4 ^s 2 ^s .7
11	23 ^s .78 ^s 0 ^s .05	41 ^s .6 ^s 1 ^s .8	55 ^s .28 ^s 0 ^s .02	47 ^s .9 ^s 1 ^s .0	27 ^s .48 ^s 0 ^s .08	71 ^s .1 ^s 2 ^s .4
21	23 ^s .73 ^s 0 ^s .09	43 ^s .4 ^s 1 ^s .5	55 ^s .26 ^s 0 ^s .07	48 ^s .9 ^s 0 ^s .9	27 ^s .40 ^s 0 ^s .12	73 ^s .5 ^s 2 ^s .0
31	23 ^s .64 ^s 0 ^s .12	44 ^s .9 ^s 1 ^s .2	55 ^s .19 ^s 0 ^s .10	49 ^s .8 ^s 0 ^s .8	27 ^s .28 ^s 0 ^s .16	75 ^s .5 ^s 1 ^s .7
Feb. 10	23 ^s .52 ^s 0 ^s .15	46 ^s .1 ^s 0 ^s .8	55 ^s .09 ^s 0 ^s .13	50 ^s .6 ^s 0 ^s .5	27 ^s .12 ^s 0 ^s .20	77 ^s .2 ^s 1 ^s .2
20	23 ^s .37 ^s 0 ^s .18	46 ^s .9 ^s 0 ^s .6	54 ^s .96 ^s 0 ^s .16	51 ^s .1 ^s 0 ^s .4	26 ^s .92 ^s 0 ^s .22	78 ^s .4 ^s 0 ^s .7
Mar. 1	23 ^s .19 ^s 0 ^s .19	47 ^s .5 ^s 0 ^s .2	54 ^s .80 ^s 0 ^s .16	51 ^s .5 ^s 0 ^s .1	26 ^s .70 ^s 0 ^s .23	79 ^s .1 ^s 0 ^s .3
11	23 ^s .00 ^s 0 ^s .18	47 ^s .7 ^s 0 ^s .1	54 ^s .64 ^s 0 ^s .17	51 ^s .6 ^s 0 ^s .0	26 ^s .47 ^s 0 ^s .24	79 ^s .4 ^s 0 ^s .1
21	22 ^s .82 ^s 0 ^s .19	47 ^s .6 ^s 0 ^s .5	54 ^s .47 ^s 0 ^s .16	51 ^s .6 ^s 0 ^s .2	26 ^s .23 ^s 0 ^s .23	79 ^s .3 ^s 0 ^s .6
31	22 ^s .63 ^s 0 ^s .16	47 ^s .1 ^s 0 ^s .8	54 ^s .31 ^s 0 ^s .15	51 ^s .4 ^s 0 ^s .4	26 ^s .00 ^s 0 ^s .21	78 ^s .7 ^s 1 ^s .0
Apr. 10	22 ^s .47 ^s 0 ^s .14	46 ^s .3 ^s 1 ^s .1	54 ^s .16 ^s 0 ^s .12	51 ^s .0 ^s 0 ^s .6	25 ^s .79 ^s 0 ^s .18	77 ^s .7 ^s 1 ^s .4
20	22 ^s .33 ^s 0 ^s .10	45 ^s .2 ^s 1 ^s .4	54 ^s .04 ^s 0 ^s .08	50 ^s .4 ^s 0 ^s .8	25 ^s .61 ^s 0 ^s .15	76 ^s .3 ^s 1 ^s .8
30	22 ^s .23 ^s 0 ^s .06	43 ^s .8 ^s 1 ^s .6	53 ^s .96 ^s 0 ^s .05	49 ^s .6 ^s 1 ^s .0	25 ^s .46 ^s 0 ^s .11	74 ^s .5 ^s 2 ^s .1
May 10	22 ^s .17 ^s 0 ^s .03	42 ^s .2 ^s 1 ^s .9	53 ^s .91 ^s 0 ^s .01	48 ^s .6 ^s 1 ^s .1	25 ^s .35 ^s 0 ^s .06	72 ^s .4 ^s 2 ^s .4
20	22 ^s .14 ^s 0 ^s .02	40 ^s .3 ^s 2 ^s .1	53 ^s .90 ^s 0 ^s .04	47 ^s .5 ^s 1 ^s .3	25 ^s .29 ^s 0 ^s .02	70 ^s .0 ^s 2 ^s .6
30	22 ^s .16 ^s 0 ^s .07	38 ^s .2 ^s 2 ^s .2	53 ^s .94 ^s 0 ^s .08	46 ^s .2 ^s 1 ^s .4	25 ^s .27 ^s 0 ^s .03	67 ^s .4 ^s 2 ^s .9
June 9	22 ^s .23 ^s 0 ^s .12	36 ^s .0 ^s 2 ^s .6	54 ^s .02 ^s 0 ^s .13	44 ^s .8 ^s 1 ^s .6	25 ^s .30 ^s 0 ^s .09	64 ^s .5 ^s 3 ^s .2
19	22 ^s .35 ^s 0 ^s .14	33 ^s .4 ^s 2 ^s .4	54 ^s .15 ^s 0 ^s .16	43 ^s .2 ^s 1 ^s .6	25 ^s .39 ^s 0 ^s .13	61 ^s .3 ^s 3 ^s .0
29	22 ^s .49 ^s 0 ^s .19	31 ^s .0 ^s 2 ^s .3	54 ^s .31 ^s 0 ^s .20	41 ^s .6 ^s 1 ^s .6	25 ^s .52 ^s 0 ^s .18	58 ^s .3 ^s 2 ^s .9
July 9	22 ^s .68 ^s 0 ^s .22	28 ^s .7 ^s 2 ^s .3	54 ^s .51 ^s 0 ^s .22	40 ^s .0 ^s 1 ^s .6	25 ^s .70 ^s 0 ^s .21	55 ^s .4 ^s 2 ^s .8
19	22 ^s .90 ^s 0 ^s .24	26 ^s .4 ^s 2 ^s .1	54 ^s .73 ^s 0 ^s .24	38 ^s .4 ^s 1 ^s .4	25 ^s .91 ^s 0 ^s .24	52 ^s .6 ^s 2 ^s .5
29	23 ^s .14 ^s 0 ^s .27	24 ^s .3 ^s 1 ^s .8	54 ^s .97 ^s 0 ^s .27	37 ^s .0 ^s 1 ^s .4	26 ^s .15 ^s 0 ^s .27	50 ^s .1 ^s 2 ^s .3
Aug. 8	23 ^s .41 ^s 0 ^s .28	22 ^s .5 ^s 1 ^s .6	55 ^s .24 ^s 0 ^s .28	35 ^s .6 ^s 1 ^s .1	26 ^s .42 ^s 0 ^s .30	47 ^s .8 ^s 1 ^s .9
18	23 ^s .69 ^s 0 ^s .29	20 ^s .9 ^s 1 ^s .2	55 ^s .52 ^s 0 ^s .29	34 ^s .5 ^s 0 ^s .9	26 ^s .72 ^s 0 ^s .31	45 ^s .9 ^s 1 ^s .4
28	23 ^s .98 ^s 0 ^s .30	19 ^s .7 ^s 0 ^s .8	55 ^s .81 ^s 0 ^s .30	33 ^s .6 ^s 0 ^s .7	27 ^s .03 ^s 0 ^s .32	44 ^s .5 ^s 0 ^s .9
Sept. 7	24 ^s .28 ^s 0 ^s .30	18 ^s .9 ^s 0 ^s .4	56 ^s .11 ^s 0 ^s .29	32 ^s .9 ^s 0 ^s .3	27 ^s .35 ^s 0 ^s .33	43 ^s .6 ^s 0 ^s .4
17	24 ^s .58 ^s 0 ^s .30	18 ^s .5 ^s 0 ^s .1	56 ^s .40 ^s 0 ^s .30	32 ^s .6 ^s 0 ^s .1	27 ^s .68 ^s 0 ^s .32	43 ^s .2 ^s 0 ^s .2
27	24 ^s .88 ^s 0 ^s .29	18 ^s .6 ^s 0 ^s .6	56 ^s .70 ^s 0 ^s .29	32 ^s .5 ^s 0 ^s .2	28 ^s .00 ^s 0 ^s .32	43 ^s .4 ^s 0 ^s .7
Oct. 7	25 ^s .17 ^s 0 ^s .28	19 ^s .2 ^s 0 ^s .9	56 ^s .99 ^s 0 ^s .28	32 ^s .7 ^s 0 ^s .6	28 ^s .32 ^s 0 ^s .31	44 ^s .1 ^s 1 ^s .3
17	25 ^s .45 ^s 0 ^s .27	20 ^s .1 ^s 1 ^s .4	57 ^s .27 ^s 0 ^s .27	33 ^s .3 ^s 0 ^s .8	28 ^s .63 ^s 0 ^s .29	45 ^s .4 ^s 1 ^s .7
27	25 ^s .72 ^s 0 ^s .24	21 ^s .5 ^s 1 ^s .7	57 ^s .54 ^s 0 ^s .25	34 ^s .1 ^s 1 ^s .0	28 ^s .92 ^s 0 ^s .26	47 ^s .1 ^s 2 ^s .2
Nov. 6	25 ^s .96 ^s 0 ^s .22	23 ^s .2 ^s 2 ^s .0	57 ^s .79 ^s 0 ^s .23	35 ^s .1 ^s 1 ^s .3	29 ^s .18 ^s 0 ^s .23	49 ^s .3 ^s 2 ^s .5
16	26 ^s .18 ^s 0 ^s .18	25 ^s .2 ^s 2 ^s .2	58 ^s .02 ^s 0 ^s .20	36 ^s .4 ^s 1 ^s .3	29 ^s .41 ^s 0 ^s .19	51 ^s .8 ^s 2 ^s .8
26	26 ^s .36 ^s 0 ^s .15	27 ^s .4 ^s 2 ^s .2	58 ^s .22 ^s 0 ^s .16	37 ^s .7 ^s 1 ^s .4	29 ^s .60 ^s 0 ^s .15	54 ^s .6 ^s 3 ^s .0
Dec. 6	26 ^s .51 ^s 0 ^s .11	29 ^s .6 ^s 2 ^s .3	58 ^s .38 ^s 0 ^s .13	39 ^s .1 ^s 1 ^s .5	29 ^s .75 ^s 0 ^s .10	57 ^s .6 ^s 3 ^s .0
16	26 ^s .62 ^s 0 ^s .07	31 ^s .9 ^s 2 ^s .3	58 ^s .51 ^s 0 ^s .09	40 ^s .6 ^s 1 ^s .4	29 ^s .85 ^s 0 ^s .06	60 ^s .6 ^s 2 ^s .9
26	26 ^s .69 ^s 0 ^s .03	34 ^s .2 ^s 2 ^s .1	58 ^s .60 ^s 0 ^s .04	42 ^s .0 ^s 1 ^s .3	29 ^s .91 ^s 0 ^s .00	63 ^s .5 ^s 2 ^s .8
36	26 ^s .72 ^s 0 ^s .03	36 ^s .3 ^s	58 ^s .64 ^s	43 ^s .3 ^s	29 ^s .91 ^s	66 ^s .3 ^s

FIXED STARS, 1856.

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APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Orionis.		μ Geminorum.		α Argus. (Canopus)	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. South.
	h m	° '	h m	° '	h m	° '
	5 47	7 22	6 14	22 35	6 20	52 36
Jan. 1	23 ^s .42 ^s 0 ^s .04	40 ^s .0 ^s 0 ^s .8	15 ^s .80 ^s 0 ^s .08	5 ^s .6 ^s 0 ^s .0	47 ^s .42 ^s 0 ^s .03	61 ^s .0 ^s 3 ^s .4
11	23 ^s .46 0 ^s .00	39 ^s .2 0 ^s .6	15 ^s .88 0 ^s .03	5 ^s .6 0 ^s .2	47 ^s .39 0 ^s .10	64 ^s .4 3 ^s .1
21	23 ^s .46 0 ^s .05	38 ^s .6 0 ^s .6	15 ^s .91 0 ^s .02	5 ^s .8 0 ^s .2	47 ^s .29 0 ^s .16	67 ^s .5 2 ^s .8
31	23 ^s .41 0 ^s .09	38 ^s .0 0 ^s .5	15 ^s .89 0 ^s .07	6 ^s .0 0 ^s .2	47 ^s .13 0 ^s .23	70 ^s .3 2 ^s .4
Feb. 10	23 ^s .32 0 ^s .12	37 ^s .5 0 ^s .3	15 ^s .82 0 ^s .11	6 ^s .2 0 ^s .2	46 ^s .90 0 ^s .27	72 ^s .7 2 ^s .0
20	23 ^s .20 0 ^s .14	37 ^s .2 0 ^s .2	15 ^s .71 0 ^s .15	6 ^s .4 0 ^s .2	46 ^s .63 0 ^s .31	74 ^s .7 1 ^s .5
Mar. 1	23 ^s .06 0 ^s .16	37 ^s .0 0 ^s .1	15 ^s .56 0 ^s .16	6 ^s .6 0 ^s .1	46 ^s .32 0 ^s .34	76 ^s .2 1 ^s .0
11	22 ^s .90 0 ^s .17	36 ^s .9 0 ^s .0	15 ^s .40 0 ^s .17	6 ^s .7 0 ^s .2	45 ^s .98 0 ^s .36	77 ^s .2 0 ^s .4
21	22 ^s .73 0 ^s .16	36 ^s .9 0 ^s .1	15 ^s .23 0 ^s .18	6 ^s .9 0 ^s .0	45 ^s .62 0 ^s .36	77 ^s .6 0 ^s .0
31	22 ^s .57 0 ^s .15	37 ^s .0 0 ^s .2	15 ^s .05 0 ^s .16	6 ^s .9 0 ^s .0	45 ^s .26 0 ^s .34	77 ^s .6 0 ^s .6
Apr. 10	22 ^s .42 0 ^s .13	37 ^s .2 0 ^s .3	14 ^s .89 0 ^s .14	6 ^s .9 0 ^s .0	44 ^s .92 0 ^s .32	77 ^s .0 1 ^s .1
20	22 ^s .29 0 ^s .09	37 ^s .5 0 ^s .4	14 ^s .75 0 ^s .11	6 ^s .9 0 ^s .1	44 ^s .60 0 ^s .29	75 ^s .9 1 ^s .6
30	22 ^s .20 0 ^s .05	37 ^s .9 0 ^s .6	14 ^s .64 0 ^s .08	6 ^s .8 0 ^s .1	44 ^s .31 0 ^s .24	74 ^s .3 2 ^s .0
May 10	22 ^s .15 0 ^s .02	38 ^s .5 0 ^s .6	14 ^s .56 0 ^s .03	6 ^s .7 0 ^s .1	44 ^s .07 0 ^s .20	72 ^s .3 2 ^s .3
20	22 ^s .13 0 ^s .03	39 ^s .1 0 ^s .8	14 ^s .53 0 ^s .01	6 ^s .6 0 ^s .1	43 ^s .87 0 ^s .14	70 ^s .0 2 ^s .7
30	22 ^s .16 0 ^s .07	39 ^s .9 0 ^s .9	14 ^s .54 0 ^s .05	6 ^s .5 0 ^s .0	43 ^s .73 0 ^s .08	67 ^s .3 3 ^s .0
June 9	22 ^s .23 0 ^s .12	40 ^s .8 1 ^s .1	14 ^s .59 0 ^s .10	6 ^s .5 0 ^s .0	43 ^s .65 0 ^s .02	64 ^s .3 3 ^s .1
19	22 ^s .35 0 ^s .15	41 ^s .9 1 ^s .0	14 ^s .69 0 ^s .16	6 ^s .5 0 ^s .0	43 ^s .63 0 ^s .04	61 ^s .2 3 ^s .6
29	22 ^s .50 0 ^s .19	42 ^s .9 1 ^s .1	14 ^s .85 0 ^s .18	6 ^s .5 0 ^s .1	43 ^s .67 0 ^s .11	57 ^s .6 3 ^s .3
July 9	22 ^s .69 0 ^s .21	44 ^s .0 1 ^s .0	15 ^s .03 0 ^s .21	6 ^s .6 0 ^s .2	43 ^s .78 0 ^s .16	54 ^s .3 3 ^s .2
19	22 ^s .90 0 ^s .24	45 ^s .0 1 ^s .0	15 ^s .24 0 ^s .24	6 ^s .8 0 ^s .1	43 ^s .94 0 ^s .22	51 ^s .1 3 ^s .0
29	23 ^s .14 0 ^s .27	46 ^s .0 1 ^s .0	15 ^s .48 0 ^s .27	6 ^s .9 0 ^s .2	44 ^s .16 0 ^s .27	48 ^s .1 2 ^s .8
Aug. 8	23 ^s .41 0 ^s .28	47 ^s .0 0 ^s .9	15 ^s .75 0 ^s .29	7 ^s .1 0 ^s .1	44 ^s .43 0 ^s .31	45 ^s .3 2 ^s .4
18	23 ^s .69 0 ^s .29	47 ^s .9 0 ^s .6	16 ^s .04 0 ^s .30	7 ^s .2 0 ^s .1	44 ^s .74 0 ^s .34	42 ^s .9 1 ^s .9
28	23 ^s .98 0 ^s .30	48 ^s .5 0 ^s .5	16 ^s .34 0 ^s .32	7 ^s .3 0 ^s .0	45 ^s .08 0 ^s .38	41 ^s .0 1 ^s .4
Sept. 7	24 ^s .28 0 ^s .30	49 ^s .0 0 ^s .3	16 ^s .66 0 ^s .32	7 ^s .3 0 ^s .0	45 ^s .46 0 ^s .39	39 ^s .6 0 ^s .9
17	24 ^s .58 0 ^s .30	49 ^s .3 0 ^s .1	16 ^s .98 0 ^s .33	7 ^s .3 0 ^s .1	45 ^s .85 0 ^s .41	38 ^s .7 0 ^s .2
27	24 ^s .88 0 ^s .31	49 ^s .4 0 ^s .2	17 ^s .31 0 ^s .33	7 ^s .2 0 ^s .2	46 ^s .26 0 ^s .42	38 ^s .5 0 ^s .5
Oct. 7	25 ^s .19 0 ^s .29	49 ^s .2 0 ^s .4	17 ^s .64 0 ^s .33	7 ^s .0 0 ^s .2	46 ^s .68 0 ^s .40	39 ^s .0 1 ^s .0
17	25 ^s .48 0 ^s .29	48 ^s .8 0 ^s .6	17 ^s .97 0 ^s .33	6 ^s .8 0 ^s .3	47 ^s .08 0 ^s .39	40 ^s .0 1 ^s .7
27	25 ^s .77 0 ^s .26	48 ^s .2 0 ^s .7	18 ^s .30 0 ^s .31	6 ^s .5 0 ^s .3	47 ^s .47 0 ^s .36	41 ^s .7 2 ^s .2
Nov. 6	26 ^s .03 0 ^s .25	47 ^s .5 0 ^s .9	18 ^s .61 0 ^s .29	6 ^s .2 0 ^s .3	47 ^s .83 0 ^s .32	43 ^s .9 2 ^s .7
16	26 ^s .28 0 ^s .22	46 ^s .6 0 ^s .9	18 ^s .90 0 ^s .27	5 ^s .9 0 ^s .3	48 ^s .15 0 ^s .27	46 ^s .6 3 ^s .1
26	26 ^s .50 0 ^s .19	45 ^s .7 1 ^s .0	19 ^s .17 0 ^s .23	5 ^s .6 0 ^s .2	48 ^s .42 0 ^s .22	49 ^s .7 3 ^s .4
Dec. 6	26 ^s .69 0 ^s .16	44 ^s .7 1 ^s .0	19 ^s .40 0 ^s .20	5 ^s .4 0 ^s .2	48 ^s .64 0 ^s .15	53 ^s .1 3 ^s .1
16	26 ^s .85 0 ^s .11	43 ^s .7 1 ^s .0	19 ^s .60 0 ^s .16	5 ^s .2 0 ^s .1	48 ^s .79 0 ^s .08	56 ^s .6 3 ^s .1
26	26 ^s .96 0 ^s .08	42 ^s .7 0 ^s .8	19 ^s .76 0 ^s .11	5 ^s .1 0 ^s .0	48 ^s .87 0 ^s .01	60 ^s .2 3 ^s .1
36	27 ^s .04 0 ^s .04	41 ^s .9 0 ^s .8	19 ^s .87 0 ^s .07	5 ^s .1 0 ^s .0	48 ^s .88 0 ^s .01	63 ^s .0 3 ^s .1

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.						
Day of the Month.	51 (Hev.) Cephei.		α Canis Majoris. (Sirius)		ε Canis Majoris	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec.
	h m 6 31	° ′ 87 14	h m 6 38	° ′ 16 31	h m 6 52	° 28
Jan. 1	60° 18' 5"	73° 7' 7"	49° 24' 0.07"	13° 3' 7"	59° 13' 0.07"	38° 1'
11	60° 60' 0.42"	77° 0' 3.3"	49° 31' 0.02"	15° 6' 2.1"	59° 20' 0.02"	41° 0'
21	60° 11' 0.49"	80° 2' 3.2"	49° 33' 0.03"	17° 7' 1.9"	59° 22' 0.04"	43° 6'
31	58° 73' 1.38"	83° 2' 3.0"	49° 30' 0.08"	19° 6' 1.6"	59° 18' 0.08"	46° 0'
Feb. 10	56° 53' 2.20"	85° 9' 2.7"	49° 22' 0.11"	21° 2' 1.4"	59° 10' 0.13"	48° 2'
20	53° 63' 2.90"	88° 2' 2.3"	49° 11' 0.14"	22° 6' 1.0"	58° 97' 0.17"	50° 0'
Mar. 1	50° 15' 3.48"	90° 0' 1.8"	48° 97' 0.17"	23° 6' 0.7"	58° 80' 0.19"	51° 4'
11	46° 25' 3.90"	91° 3' 1.3"	48° 80' 0.19"	24° 3' 0.3"	58° 61' 0.20"	52° 4'
21	42° 11' 4.14"	91° 9' 0.1"	48° 61' 0.18"	24° 6' 0.0"	58° 41' 0.21"	53° 0'
31	37° 91' 4.20"	92° 0' 0.5"	48° 43' 0.18"	24° 6' 0.2"	58° 20' 0.21"	53° 2'
Apr. 10	33° 81' 4.10"	91° 5' 1.1"	48° 25' 0.16"	24° 4' 0.6"	57° 99' 0.20"	53° 0'
20	29° 99' 3.82"	90° 4' 1.6"	48° 09' 0.14"	23° 8' 0.9"	57° 79' 0.17"	52° 4'
30	26° 59' 3.40"	88° 8' 2.1"	47° 95' 0.12"	22° 9' 1.2"	57° 62' 0.15"	51° 4'
May 10	23° 72' 2.87"	86° 7' 2.5"	47° 83' 0.07"	21° 7' 1.4"	57° 47' 0.11"	50° 0'
20	21° 51' 2.21"	84° 2' 2.5"	47° 76' 0.04"	20° 3' 1.6"	57° 36' 0.07"	48° 4'
30	20° 00' 0.73"	81° 5' 2.9"	47° 72' 0.01"	18° 7' 1.8"	57° 29' 0.04"	46° 4'
June 9	19° 27' 0.05"	78° 6' 3.1"	47° 71' 0.04"	16° 9' 2.0"	57° 25' 0.01"	44° 2'
19	19° 32' 0.96"	75° 5' 3.4"	47° 75' 0.08"	14° 9' 2.0"	57° 26' 0.05"	41° 8'
29	20° 28' 1.69"	72° 1' 3.0"	47° 83' 0.13"	12° 9' 2.3"	57° 31' 0.10"	39° 3'
July 9	21° 97' 2.39"	69° 1' 2.9"	47° 96' 0.15"	10° 6' 2.1"	57° 41' 0.13"	36° 4'
19	24° 36' 3.08"	66° 2' 2.7"	48° 11' 0.19"	8° 5' 1.9"	57° 54' 0.17"	33° 9'
29	27° 44' 3.68"	63° 5' 2.4"	48° 30' 0.21"	6° 6' 1.8"	57° 71' 0.20"	31° 4'
Aug. 8	31° 12' 4.22"	61° 1' 2.2"	48° 51' 0.23"	4° 8' 1.6"	57° 91' 0.23"	29° 1'
18	35° 34' 4.66"	58° 9' 1.7"	48° 74' 0.26"	3° 2' 1.2"	58° 14' 0.26"	27° 1'
28	40° 00' 5.04"	57° 2' 1.4"	49° 00' 0.27"	2° 0' 0.9"	58° 40' 0.27"	25° 5'
Sept. 7	45° 04' 5.29"	55° 8' 1.0"	49° 27' 0.29"	1° 1' 0.5"	58° 67' 0.30"	24° 2'
17	50° 33' 5.46"	54° 8' 0.5"	49° 56' 0.29"	0° 6' 0.1"	58° 97' 0.31"	23° 4'
27	55° 79' 5.52"	54° 3' 0.1"	49° 85' 0.30"	0° 5' 0.4"	59° 28' 0.32"	23° 1'
Oct. 7	61° 31' 5.47"	54° 2' 0.5"	50° 15' 0.31"	0° 9' 0.8"	59° 60' 0.32"	23° 4'
17	66° 78' 5.29"	54° 7' 0.9"	50° 46' 0.30"	1° 7' 1.3"	59° 92' 0.32"	24° 1'
27	72° 07' 5.02"	55° 6' 1.5"	50° 76' 0.28"	3° 0' 1.6"	60° 24' 0.31"	25° 4'
Nov. 6	77° 09' 4.58"	57° 1' 1.8"	51° 04' 0.27"	4° 6' 2.0"	60° 55' 0.29"	27° 2'
16	81° 67' 4.05"	58° 9' 2.3"	51° 31' 0.25"	6° 6' 2.2"	60° 84' 0.26"	29° 7'
26	85° 72' 3.40"	61° 2' 2.6"	51° 56' 0.22"	8° 8' 2.3"	61° 10' 0.23"	31° 0'
Dec. 6	89° 12' 2.64"	62° 8' 2.9"	51° 78' 0.19"	11° 1' 2.5"	61° 33' 0.20"	34° 1'
16	91° 76' 1.81"	66° 7' 3.1"	51° 97' 0.14"	13° 6' 2.4"	61° 53' 0.15"	37° 1'
26	93° 57' 0.92"	69° 8' 3.2"	52° 11' 0.09"	16° 0' 2.4"	61° 68' 0.10"	40° 1'
36	94° 49' 0.92"	73° 0' 3.2"	52° 20' 0.09"	18° 4' 2.4"	61° 78' 0.10"	43° 1'

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	♊ Gemorum.		♊ Gemorum. (Castor)		♋ Canis Minoris. (Procyon)	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	h m 7 11	° ' " 22 14	h m 7 25	° ' " 32 11	h m 7 31	° ' " 5 35
Jan. 1	32° 14' 00"	41° 1' 00"	25° 43' 00"	63° 4' 00"	46° 50' 00"	32° 8' 00"
11	32° 28' 00"	41° 0' 00"	25° 60' 00"	63° 8' 00"	46° 64' 00"	31° 6' 00"
21	32° 37' 00"	41° 0' 00"	25° 71' 00"	64° 4' 00"	46° 74' 00"	30° 5' 00"
31	32° 40' 00"	41° 2' 00"	25° 76' 00"	65° 2' 00"	46° 78' 00"	29° 6' 00"
Feb. 10	32° 38' 00"	41° 4' 00"	25° 75' 00"	66° 0' 00"	46° 77' 00"	28° 9' 00"
20	32° 32' 00"	41° 8' 00"	25° 69' 00"	66° 8' 00"	46° 72' 00"	28° 3' 00"
Mar. 1	32° 21' 00"	42° 1' 00"	25° 58' 00"	67° 6' 00"	46° 63' 00"	27° 9' 00"
11	32° 07' 00"	42° 5' 00"	25° 44' 00"	68° 3' 00"	46° 51' 00"	27° 7' 00"
21	31° 91' 00"	42° 8' 00"	25° 27' 00"	68° 9' 00"	46° 36' 00"	27° 6' 00"
31	31° 74' 00"	43° 0' 00"	25° 09' 00"	69° 4' 00"	46° 20' 00"	27° 7' 00"
Apr. 10	31° 58' 00"	43° 3' 00"	24° 90' 00"	69° 7' 00"	46° 05' 00"	27° 8' 00"
20	31° 42' 00"	43° 4' 00"	24° 73' 00"	69° 8' 00"	45° 90' 00"	28° 1' 00"
30	31° 28' 00"	43° 5' 00"	24° 57' 00"	69° 8' 00"	45° 76' 00"	28° 5' 00"
May 10	31° 18' 00"	43° 6' 00"	24° 44' 00"	69° 6' 00"	45° 65' 00"	28° 9' 00"
20	31° 10' 00"	43° 6' 00"	24° 35' 00"	69° 3' 00"	45° 56' 00"	29° 5' 00"
30	31° 06' 00"	43° 6' 00"	24° 30' 00"	68° 8' 00"	45° 51' 00"	30° 1' 00"
June 9	31° 07' 00"	43° 5' 00"	24° 29' 00"	68° 3' 00"	45° 49' 00"	30° 8' 00"
19	31° 11' 00"	43° 4' 00"	24° 32' 00"	67° 7' 00"	45° 51' 00"	31° 5' 00"
29	31° 19' 00"	43° 3' 00"	24° 39' 00"	67° 0' 00"	45° 56' 00"	32° 3' 00"
July 9	31° 33' 00"	43° 2' 00"	24° 50' 00"	66° 3' 00"	45° 64' 00"	33° 1' 00"
19	31° 49' 00"	43° 1' 00"	24° 67' 00"	65° 5' 00"	45° 77' 00"	33° 9' 00"
29	31° 68' 00"	43° 0' 00"	24° 86' 00"	64° 7' 00"	45° 93' 00"	34° 6' 00"
Aug. 8	31° 90' 00"	42° 8' 00"	25° 08' 00"	63° 9' 00"	46° 11' 00"	35° 2' 00"
18	32° 14' 00"	42° 6' 00"	25° 34' 00"	63° 1' 00"	46° 31' 00"	35° 7' 00"
28	32° 41' 00"	42° 3' 00"	25° 62' 00"	62° 3' 00"	46° 54' 00"	36° 0' 00"
Sept. 7	32° 69' 00"	42° 0' 00"	25° 92' 00"	61° 5' 00"	46° 79' 00"	36° 1' 00"
17	33° 00' 00"	41° 5' 00"	26° 24' 00"	60° 7' 00"	47° 05' 00"	36° 0' 00"
27	33° 31' 00"	41° 0' 00"	26° 58' 00"	59° 9' 00"	47° 33' 00"	35° 7' 00"
Oct. 7	33° 64' 00"	40° 4' 00"	26° 93' 00"	59° 1' 00"	47° 63' 00"	
17	33° 98' 00"	39° 7' 00"	27° 30' 00"	58° 3' 00"	47° 94' 00"	
27	34° 32' 00"	39° 0' 00"	27° 67' 00"	57° 6' 00"	48° 25' 00"	
Nov. 6	34° 65' 00"	38° 3' 00"	28° 04' 00"	57° 0' 00"	48° 57' 00"	
16	34° 98' 00"	37° 6' 00"	28° 40' 00"	56° 5' 00"	48° 88' 00"	
26	35° 29' 00"	36° 9' 00"	28° 74' 00"	56° 1' 00"	49° 17' 00"	
Dec. 6	35° 58' 00"	36° 3' 00"	29° 06' 00"	55° 9' 00"	49° 44' 00"	
16	35° 83' 00"	35° 8' 00"	29° 35' 00"	55° 9' 00"	49° 69' 00"	
26	36° 04' 00"	35° 4' 00"	29° 59' 00"	56° 0' 00"	49° 00' 00"	
36	36° 21' 00"	35° 2' 00"	29° 79' 00"	56° 4' 00"	50° 00' 00"	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.						
Day of the Month.	β Geminorum. (Pollux)		15 Argus.		α Hydra.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. North.
	^h 7 ^m 36	^o 28 ['] 22	^h 8 ^m 1	^o 23 ['] 53	^h 8 ^m 39	^o 6 ['] 56
Jan. 1	30 ^s .92	16 ^s .0	25 ^s .59	21 ^s .2	9 ^s .58	44 ^s .2
11	31 ^s .09 0 ^s .17	16 ^s .2 0 ^s .2	25 ^s .74 0 ^s .15	24 ^s .1 2 ^s .9	9 ^s .78 0 ^s .20	42 ^s .8 1 ^s .4
21	31 ^s .21 0 ^s .12	16 ^s .5 0 ^s .3	25 ^s .84 0 ^s .10	26 ^s .8 2 ^s .7	9 ^s .94 0 ^s .16	41 ^s .6 1 ^s .0
31	31 ^s .27 0 ^s .06	17 ^s .0 0 ^s .5	25 ^s .88 0 ^s .04	29 ^s .4 2 ^s .6	10 ^s .05 0 ^s .11	40 ^s .6 0 ^s .7
Feb. 10	31 ^s .27 0 ^s .00	17 ^s .6 0 ^s .6	25 ^s .88 0 ^s .00	31 ^s .7 2 ^s .3	10 ^s .11 0 ^s .06	39 ^s .9 0 ^s .7
20	31 ^s .22 0 ^s .05	18 ^s .2 0 ^s .6	25 ^s .82 0 ^s .06	33 ^s .8 2 ^s .1	10 ^s .12 0 ^s .01	39 ^s .3 0 ^s .0
Mar. 1	31 ^s .13 0 ^s .09	18 ^s .9 0 ^s .7	25 ^s .72 0 ^s .10	35 ^s .5 1 ^s .7	10 ^s .09 0 ^s .03	38 ^s .9 0 ^s .4
11	31 ^s .00 0 ^s .13	19 ^s .5 0 ^s .6	25 ^s .59 0 ^s .13	36 ^s .9 1 ^s .4	10 ^s .02 0 ^s .07	38 ^s .8 0 ^s .1
21	30 ^s .84 0 ^s .16	20 ^s .1 0 ^s .6	25 ^s .43 0 ^s .16	37 ^s .9 1 ^s .0	9 ^s .91 0 ^s .11	38 ^s .7 0 ^s .1
31	30 ^s .67 0 ^s .17	20 ^s .6 0 ^s .5	25 ^s .25 0 ^s .18	38 ^s .6 0 ^s .7	9 ^s .78 0 ^s .13	38 ^s .9 0 ^s .1
Apr. 10	30 ^s .49 0 ^s .18	20 ^s .9 0 ^s .3	25 ^s .07 0 ^s .18	38 ^s .9 0 ^s .3	9 ^s .65 0 ^s .13	39 ^s .1 0 ^s .1
20	30 ^s .33 0 ^s .16	21 ^s .1 0 ^s .2	24 ^s .89 0 ^s .18	38 ^s .9 0 ^s .0	9 ^s .51 0 ^s .14	39 ^s .4 0 ^s .1
30	30 ^s .17 0 ^s .16	21 ^s .2 0 ^s .1	24 ^s .71 0 ^s .18	38 ^s .5 0 ^s .4	9 ^s .37 0 ^s .14	39 ^s .7 0 ^s .1
May 10	30 ^s .04 0 ^s .13	21 ^s .2 0 ^s .0	24 ^s .56 0 ^s .15	38 ^s .5 0 ^s .8	9 ^s .24 0 ^s .13	40 ^s .2 0 ^s .1
20	29 ^s .95 0 ^s .09	21 ^s .1 0 ^s .0	24 ^s .43 0 ^s .13	37 ^s .7 1 ^s .0	9 ^s .14 0 ^s .10	40 ^s .7 0 ^s .1
30	29 ^s .89 0 ^s .06	21 ^s .1 0 ^s .3	24 ^s .32 0 ^s .11	36 ^s .7 1 ^s .4	9 ^s .05 0 ^s .09	41 ^s .2 0 ^s .1
June 9	29 ^s .87 0 ^s .02	20 ^s .8 0 ^s .4	24 ^s .32 0 ^s .07	35 ^s .3 1 ^s .7	9 ^s .05 0 ^s .06	41 ^s .2 0 ^s .6
19	29 ^s .89 0 ^s .02	20 ^s .4 0 ^s .4	24 ^s .25 0 ^s .04	33 ^s .6 1 ^s .8	8 ^s .99 0 ^s .03	41 ^s .8 0 ^s .5
29	29 ^s .89 0 ^s .06	20 ^s .0 0 ^s .4	24 ^s .21 0 ^s .04	31 ^s .8 1 ^s .8	8 ^s .96 0 ^s .03	42 ^s .3 0 ^s .6
July 9	29 ^s .95 0 ^s .10	19 ^s .6 0 ^s .4	24 ^s .20 0 ^s .01	29 ^s .9 1 ^s .9	8 ^s .96 0 ^s .03	42 ^s .9 0 ^s .6
19	30 ^s .05 0 ^s .15	19 ^s .1 0 ^s .5	24 ^s .23 0 ^s .03	27 ^s .7 2 ^s .2	8 ^s .99 0 ^s .00	43 ^s .5 0 ^s .6
29	30 ^s .20 0 ^s .15	18 ^s .5 0 ^s .6	24 ^s .30 0 ^s .07	25 ^s .5 2 ^s .2	9 ^s .05 0 ^s .06	43 ^s .5 0 ^s .5
Aug. 8	30 ^s .37 0 ^s .17	17 ^s .9 0 ^s .6	24 ^s .41 0 ^s .11	23 ^s .2 2 ^s .3	9 ^s .05 0 ^s .09	44 ^s .0 0 ^s .5
18	30 ^s .57 0 ^s .20	17 ^s .9 0 ^s .7	24 ^s .41 0 ^s .11	23 ^s .2 2 ^s .1	9 ^s .05 0 ^s .09	44 ^s .0 0 ^s .5
28	30 ^s .57 0 ^s .23	17 ^s .2 0 ^s .7	24 ^s .54 0 ^s .13	21 ^s .1 2 ^s .1	9 ^s .27 0 ^s .12	44 ^s .8 0 ^s .3
Sept. 7	30 ^s .80 0 ^s .26	16 ^s .6 0 ^s .6	24 ^s .71 0 ^s .17	19 ^s .2 1 ^s .9	9 ^s .42 0 ^s .15	45 ^s .1 0 ^s .3
17	31 ^s .06 0 ^s .26	15 ^s .9 0 ^s .7	24 ^s .91 0 ^s .20	17 ^s .6 1 ^s .6	9 ^s .42 0 ^s .17	45 ^s .1 0 ^s .1
27	31 ^s .35 0 ^s .29	15 ^s .9 0 ^s .8	24 ^s .91 0 ^s .22	17 ^s .6 1 ^s .3	9 ^s .59 0 ^s .20	45 ^s .2 0 ^s .1
Oct. 7	31 ^s .35 0 ^s .30	15 ^s .1 0 ^s .8	25 ^s .13 0 ^s .22	16 ^s .3 1 ^s .3	9 ^s .79 0 ^s .22	45 ^s .1 0 ^s .1
17	31 ^s .65 0 ^s .32	14 ^s .3 0 ^s .8	25 ^s .38 0 ^s .25	15 ^s .3 1 ^s .0	10 ^s .01 0 ^s .25	44 ^s .8 0 ^s .3
27	31 ^s .97 0 ^s .34	13 ^s .5 0 ^s .9	25 ^s .66 0 ^s .28	14 ^s .8 0 ^s .5	10 ^s .26 0 ^s .25	44 ^s .2 0 ^s .6
Nov. 6	32 ^s .31 0 ^s .34	12 ^s .6 0 ^s .9	25 ^s .96 0 ^s .30	14 ^s .8 0 ^s .0	10 ^s .26 0 ^s .27	44 ^s .2 0 ^s .8
16	32 ^s .66 0 ^s .35	11 ^s .7 0 ^s .9	26 ^s .27 0 ^s .31	14 ^s .8 0 ^s .5	10 ^s .53 0 ^s .30	43 ^s .4 1 ^s .0
26	33 ^s .01 0 ^s .35	10 ^s .9 0 ^s .8	26 ^s .59 0 ^s .32	15 ^s .3 0 ^s .5	10 ^s .83 0 ^s .30	42 ^s .4 1 ^s .2
Dec. 6	33 ^s .37 0 ^s .36	10 ^s .0 0 ^s .9	26 ^s .91 0 ^s .32	16 ^s .3 1 ^s .4	11 ^s .14 0 ^s .31	41 ^s .2 1 ^s .4
16	33 ^s .72 0 ^s .35	9 ^s .3 0 ^s .7	27 ^s .23 0 ^s .32	17 ^s .7 1 ^s .9	11 ^s .46 0 ^s .32	39 ^s .8 1 ^s .4
26	34 ^s .06 0 ^s .34	8 ^s .7 0 ^s .6	27 ^s .54 0 ^s .31	19 ^s .6 1 ^s .9	11 ^s .79 0 ^s .33	38 ^s .2 1 ^s .6
6	34 ^s .38 0 ^s .32	8 ^s .7 0 ^s .5	27 ^s .54 0 ^s .29	21 ^s .8 2 ^s .2	12 ^s .11 0 ^s .32	36 ^s .5 1 ^s .7
16	34 ^s .66 0 ^s .28	8 ^s .2 0 ^s .3	27 ^s .83 0 ^s .26	24 ^s .3 2 ^s .5	12 ^s .43 0 ^s .29	34 ^s .8 1 ^s .6
26	34 ^s .91 0 ^s .25	7 ^s .9 0 ^s .1	28 ^s .09 0 ^s .22	27 ^s .1 2 ^s .8	12 ^s .72 0 ^s .27	33 ^s .2 1 ^s .6
36	35 ^s .11 0 ^s .20	7 ^s .8 0 ^s .0	28 ^s .31 0 ^s .18	30 ^s .0 2 ^s .9	12 ^s .99 0 ^s .27	31 ^s .6 1 ^s .6
		7 ^s .8 0 ^s .0	28 ^s .49 0 ^s .18	32 ^s .9 2 ^s .9	13 ^s .22 0 ^s .23	30 ^s .1 1 ^s .5

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	♌ Ursæ Majoris.		♈ Argus.		♉ Hydræ.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. South.
	h m	° '	h m	° '	h m	° '
	8 49	48 35	9 13	58 40	9 20	8 2
Jan. 1	21° 08' 0.30	71° 4' 0.9	15° 31' 0.27	0° 9' 3.7	31° 13' 0.23	4° 8' 2.2
11	21° 38' 0.24	72° 3' 1.3	15° 58' 0.19	4° 6' 3.7	31° 36' 0.19	7° 0' 2.1
21	21° 62' 0.17	73° 6' 1.5	15° 77' 0.11	8° 3' 3.8	31° 55' 0.14	9° 1' 2.0
31	21° 79' 0.10	75° 1' 1.7	15° 88' 0.02	12° 1' 3.8	31° 69' 0.09	11° 1' 1.8
Feb. 10	21° 89' 0.02	76° 8' 1.7	15° 90' 0.06	15° 9' 3.6	31° 78' 0.04	12° 9' 1.5
20	21° 91' 0.04	78° 5' 1.8	15° 84' 0.13	19° 5' 3.4	31° 82' 0.00	14° 4' 1.3
Mar. 1	21° 87' 0.11	80° 3' 1.8	15° 71' 0.19	22° 9' 3.0	31° 82' 0.04	15° 7' 1.0
11	21° 76' 0.16	82° 1' 1.5	15° 52' 0.25	25° 9' 2.7	31° 78' 0.08	16° 7' 0.8
21	21° 60' 0.19	83° 6' 1.4	15° 27' 0.30	28° 6' 2.3	31° 70' 0.11	17° 5' 0.5
31	21° 41' 0.22	85° 0' 1.1	14° 97' 0.33	30° 9' 1.8	31° 59' 0.12	18° 0' 0.3
Apr. 10	21° 19' 0.23	86° 1' 0.8	14° 64' 0.35	32° 7' 1.3	31° 47' 0.13	18° 3' 0.1
20	20° 96' 0.23	86° 9' 0.4	14° 29' 0.36	34° 0' 0.8	31° 34' 0.14	18° 4' 0.2
30	20° 73' 0.21	87° 3' 0.1	13° 93' 0.36	34° 8' 0.3	31° 20' 0.13	18° 2' 0.3
May 10	20° 52' 0.19	87° 4' 0.2	13° 57' 0.35	35° 1' 0.2	31° 07' 0.12	17° 9' 0.5
20	20° 33' 0.16	87° 2' 0.6	13° 22' 0.33	34° 9' 0.7	30° 95' 0.10	17° 4' 0.7
30	20° 17' 0.12	86° 6' 0.9	12° 89' 0.30	34° 2' 1.2	30° 85' 0.09	16° 7' 0.9
June 9	20° 05' 0.08	85° 7' 1.2	12° 59' 0.27	33° 0' 1.6	30° 76' 0.06	15° 8' 0.9
19	19° 97' 0.04	84° 5' 1.4	12° 32' 0.22	31° 4' 2.0	30° 70' 0.04	14° 9' 1.1
29	19° 93' 0.01	83° 1' 1.6	12° 10' 0.18	29° 4' 2.4	30° 66' 0.01	13° 8' 1.2
July 9	19° 94' 0.06	81° 5' 1.8	11° 92' 0.12	27° 0' 2.7	30° 65' 0.01	12° 6' 1.1
19	20° 00' 0.11	79° 7' 1.9	11° 80' 0.06	24° 3' 2.8	30° 66' 0.04	11° 5' 1.2
29	20° 11' 0.16	77° 8' 2.3	11° 74' 0.00	21° 5' 3.2	30° 70' 0.07	10° 3' 1.1
Aug. 8	20° 27' 0.20	75° 5' 2.1	11° 74' 0.07	18° 3' 3.0	30° 77' 0.10	9° 2' 1.1
18	20° 47' 0.23	73° 4' 2.1	11° 81' 0.14	15° 3' 2.9	30° 87' 0.13	8° 1' 0.8
28	20° 70' 0.28	71° 3' 2.2	11° 95' 0.21	12° 4' 2.6	31° 00' 0.15	7° 3' 0.6
Sept. 7	20° 98' 0.32	69° 1' 2.1	12° 16' 0.27	9° 8' 2.3	31° 15' 0.17	6° 7' 0.4
17	21° 30' 0.35	67° 0' 2.1	12° 43' 0.34	7° 5' 1.9	31° 34' 0.19	5° 3' 0.0
27	21° 65' 0.39	64° 9' 1.9	12° 77' 0.39	5° 6' 1.4	31° 56' 0.21	3° 3' 0.0
Oct. 7	22° 04' 0.41	63° 0' 1.8	13° 16' 0.43	4° 2' 0.8	31° 8' 0.22	2° 3' 0.0
17	22° 45' 0.44	61° 2' 1.5	13° 59' 0.47	3° 4' 0.2	32° 0' 0.23	1° 3' 0.0
27	22° 89' 0.46	59° 7' 1.4	14° 06' 0.50	3° 2' 0.5	32° 1' 0.24	0° 3' 0.0
Nov. 6	23° 35' 0.46	58° 3' 1.0	14° 56' 0.50	3° 7' 1.1	32° 1' 0.25	0° 3' 0.0
16	23° 81' 0.47	57° 3' 0.7	15° 06' 0.49	4° 8' 1.7	32° 1' 0.26	0° 3' 0.0
26	24° 28' 0.45	56° 6' 0.4	15° 55' 0.47	6° 5' 2.3	32° 1' 0.27	0° 3' 0.0
Dec. 6	24° 73' 0.42	56° 2' 0.0	16° 02' 0.43	8° 8' 2.9	32° 1' 0.28	0° 3' 0.0
16	25° 15' 0.39	56° 2' 0.3	16° 45' 0.38	11° 7' 3.2	32° 1' 0.29	0° 3' 0.0
26	25° 54' 0.34	56° 5' 0.8	16° 83' 0.31	14° 9' 3.5	32° 1' 0.30	0° 3' 0.0
36	25° 88' 0.34	57° 3' 0.8	17° 14' 0.31	18° 4' 3.5	32° 1' 0.31	0° 3' 0.0

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	θ Ursæ Majoris.			ε Leonis.			α Leonis. (Regulus)					
	R. A.		Dec. North.	R. A.		Dec. North.	R. A.		Dec. North.			
	h	m	°	'	h	m	°	'	h	m	°	'
	9	23	52	19	9	37	24	25	10	0	12	39
Jan. 1	13 ^a ·57	0 ^a ·36	46 ^a ·3	0 ^a ·9	40 ^a ·91	0 ^a ·28	65 ^a ·6	0 ^a ·7	42 ^a ·41	0 ^a ·28	70 ^a ·5	1 ^a ·4
11	13 ^a ·93	0 ^a ·30	47 ^a ·2	1 ^a ·2	41 ^a ·19	0 ^a ·24	64 ^a ·9	0 ^a ·4	42 ^a ·69	0 ^a ·23	69 ^a ·1	1 ^a ·2
21	14 ^a ·23	0 ^a ·23	48 ^a ·4	1 ^a ·5	41 ^a ·43	0 ^a ·18	64 ^a ·5	0 ^a ·1	42 ^a ·92	0 ^a ·19	67 ^a ·9	0 ^a ·9
31	14 ^a ·46	0 ^a ·15	49 ^a ·9	1 ^a ·8	41 ^a ·61	0 ^a ·13	64 ^a ·4	0 ^a ·2	43 ^a ·11	0 ^a ·15	67 ^a ·0	0 ^a ·6
Feb. 10	14 ^a ·61	0 ^a ·07	51 ^a ·7	2 ^a ·0	41 ^a ·74	0 ^a ·08	64 ^a ·6	0 ^a ·4	43 ^a ·26	0 ^a ·09	66 ^a ·4	0 ^a ·4
20	14 ^a ·68	0 ^a ·01	53 ^a ·7	2 ^a ·0	41 ^a ·82	0 ^a ·03	65 ^a ·0	0 ^a ·6	43 ^a ·35	0 ^a ·05	66 ^a ·0	0 ^a ·1
Mar. 1	14 ^a ·67	0 ^a ·08	55 ^a ·7	2 ^a ·0	41 ^a ·85	0 ^a ·02	65 ^a ·6	0 ^a ·8	43 ^a ·40	0 ^a ·00	65 ^a ·9	0 ^a ·1
11	14 ^a ·59	0 ^a ·13	57 ^a ·7	1 ^a ·9	41 ^a ·83	0 ^a ·07	66 ^a ·4	0 ^a ·8	43 ^a ·40	0 ^a ·04	66 ^a ·0	0 ^a ·3
21	14 ^a ·46	0 ^a ·18	59 ^a ·6	1 ^a ·7	41 ^a ·76	0 ^a ·10	67 ^a ·2	0 ^a ·9	43 ^a ·36	0 ^a ·07	66 ^a ·3	0 ^a ·4
31	14 ^a ·28	0 ^a ·22	61 ^a ·3	1 ^a ·5	41 ^a ·66	0 ^a ·11	68 ^a ·1	0 ^a ·9	43 ^a ·29	0 ^a ·09	66 ^a ·7	0 ^a ·5
Apr. 10	14 ^a ·06	0 ^a ·24	62 ^a ·8	1 ^a ·1	41 ^a ·55	0 ^a ·13	69 ^a ·0	0 ^a ·7	43 ^a ·20	0 ^a ·11	67 ^a ·2	0 ^a ·5
20	13 ^a ·82	0 ^a ·25	63 ^a ·9	0 ^a ·7	41 ^a ·42	0 ^a ·14	69 ^a ·7	0 ^a ·7	43 ^a ·09	0 ^a ·12	67 ^a ·7	0 ^a ·6
30	13 ^a ·57	0 ^a ·24	64 ^a ·6	0 ^a ·4	41 ^a ·28	0 ^a ·14	70 ^a ·4	0 ^a ·6	42 ^a ·97	0 ^a ·12	68 ^a ·3	0 ^a ·6
May 10	13 ^a ·33	0 ^a ·22	65 ^a ·0	0 ^a ·0	41 ^a ·14	0 ^a ·13	71 ^a ·0	0 ^a ·4	42 ^a ·85	0 ^a ·12	68 ^a ·9	0 ^a ·5
20	13 ^a ·11	0 ^a ·21	65 ^a ·0	0 ^a ·4	41 ^a ·01	0 ^a ·11	71 ^a ·4	0 ^a ·3	42 ^a ·73	0 ^a ·10	69 ^a ·4	0 ^a ·5
30	12 ^a ·90	0 ^a ·17	64 ^a ·6	0 ^a ·8	40 ^a ·90	0 ^a ·09	71 ^a ·7	0 ^a ·2	42 ^a ·63	0 ^a ·09	69 ^a ·9	0 ^a ·4
June 9	12 ^a ·73	0 ^a ·13	63 ^a ·8	1 ^a ·1	40 ^a ·81	0 ^a ·07	71 ^a ·9	0 ^a ·1	42 ^a ·54	0 ^a ·07	70 ^a ·3	0 ^a ·4
19	12 ^a ·60	0 ^a ·09	62 ^a ·7	1 ^a ·4	40 ^a ·74	0 ^a ·04	71 ^a ·8	0 ^a ·2	42 ^a ·47	0 ^a ·06	70 ^a ·7	0 ^a ·3
29	12 ^a ·51	0 ^a ·04	61 ^a ·3	1 ^a ·7	40 ^a ·70	0 ^a ·02	71 ^a ·6	0 ^a ·3	42 ^a ·41	0 ^a ·03	71 ^a ·0	0 ^a ·2
July 9	12 ^a ·47	0 ^a ·00	59 ^a ·6	1 ^a ·9	40 ^a ·68	0 ^a ·01	71 ^a ·3	0 ^a ·5	42 ^a ·38	0 ^a ·01	71 ^a ·2	0 ^a ·1
19	12 ^a ·47	0 ^a ·05	57 ^a ·7	2 ^a ·2	40 ^a ·69	0 ^a ·04	70 ^a ·8	0 ^a ·6	42 ^a ·37	0 ^a ·02	71 ^a ·3	0 ^a ·0
29	12 ^a ·52	0 ^a ·10	55 ^a ·5	2 ^a ·3	40 ^a ·73	0 ^a ·07	70 ^a ·2	0 ^a ·8	42 ^a ·39	0 ^a ·04	71 ^a ·3	0 ^a ·1
Aug. 8	12 ^a ·62	0 ^a ·16	53 ^a ·2	2 ^a ·7	40 ^a ·80	0 ^a ·11	69 ^a ·4	1 ^a ·0	42 ^a ·43	0 ^a ·06	71 ^a ·2	0 ^a ·3
18	12 ^a ·78	0 ^a ·20	50 ^a ·5	2 ^a ·5	40 ^a ·91	0 ^a ·13	68 ^a ·4	1 ^a ·1	42 ^a ·49	0 ^a ·11	70 ^a ·9	0 ^a ·5
28	12 ^a ·98	0 ^a ·24	48 ^a ·0	2 ^a ·5	41 ^a ·04	0 ^a ·16	67 ^a ·3	1 ^a ·3	42 ^a ·60	0 ^a ·12	70 ^a ·4	0 ^a ·6
Sept. 7	13 ^a ·22	0 ^a ·29	45 ^a ·5	2 ^a ·5	41 ^a ·20	0 ^a ·19	66 ^a ·0	1 ^a ·4	42 ^a ·72	0 ^a ·16	69 ^a ·8	0 ^a ·9
17	13 ^a ·51	0 ^a ·33	43 ^a ·0	2 ^a ·5	41 ^a ·39	0 ^a ·23	64 ^a ·6	1 ^a ·5	42 ^a ·88	0 ^a ·19	68 ^a ·9	1 ^a ·0
27	13 ^a ·84	0 ^a ·37	40 ^a ·5	2 ^a ·4	41 ^a ·62	0 ^a ·25	63 ^a ·1	1 ^a ·6	43 ^a ·07	0 ^a ·23	67 ^a ·9	1 ^a ·2
Oct. 7	14 ^a ·21	0 ^a ·41	38 ^a ·1	2 ^a ·2	41 ^a ·87	0 ^a ·29	61 ^a ·5	1 ^a ·8	43 ^a ·30	0 ^a ·25	66 ^a ·7	1 ^a ·5
17	14 ^a ·62	0 ^a ·45	35 ^a ·9	2 ^a ·0	42 ^a ·16	0 ^a ·31	59 ^a ·7	1 ^a ·7	43 ^a ·55	0 ^a ·28	65 ^a ·2	1 ^a ·6
27	15 ^a ·07	0 ^a ·47	33 ^a ·9	1 ^a ·7	42 ^a ·47	0 ^a ·34	58 ^a ·0	1 ^a ·9	43 ^a ·83	0 ^a ·31	63 ^a ·6	1 ^a ·8
Nov. 6	15 ^a ·54	0 ^a ·48	32 ^a ·2	1 ^a ·5	42 ^a ·81	0 ^a ·35	56 ^a ·1	1 ^a ·7	44 ^a ·14	0 ^a ·32	61 ^a ·8	1 ^a ·8
16	16 ^a ·02	0 ^a ·50	30 ^a ·7	1 ^a ·1	43 ^a ·16	0 ^a ·36	54 ^a ·4	1 ^a ·7	44 ^a ·46	0 ^a ·34	60 ^a ·0	1 ^a ·9
26	16 ^a ·52	0 ^a ·49	29 ^a ·6	0 ^a ·6	43 ^a ·52	0 ^a ·36	52 ^a ·7	1 ^a ·6	44 ^a ·80	0 ^a ·35	58 ^a ·1	2 ^a ·0
Dec. 6	17 ^a ·01	0 ^a ·47	29 ^a ·0	0 ^a ·3	43 ^a ·88	0 ^a ·35	51 ^a ·1	1 ^a ·4	45 ^a ·15	0 ^a ·33	56 ^a ·1	1 ^a ·8
16	17 ^a ·48	0 ^a ·44	28 ^a ·7	0 ^a ·2	44 ^a ·23	0 ^a ·33	49 ^a ·7	1 ^a ·1	45 ^a ·48	0 ^a ·32	54 ^a ·3	1 ^a ·7
26	17 ^a ·92	0 ^a ·40	28 ^a ·9	0 ^a ·6	44 ^a ·56	0 ^a ·31	48 ^a ·6	0 ^a ·9	45 ^a ·80	0 ^a ·30	52 ^a ·6	1 ^a ·6
36	18 ^a ·32		29 ^a ·5		44 ^a ·87		47 ^a ·7		46 ^a ·10		51 ^a ·0	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	γ Argus.		α Ursæ Majoris.		β Leonis.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	h m	° ' "	h m	° ' "	h m	° ' "
	10 39	58 55	10 54	62 31	11 6	21 18
Jan. 1	29 ^s .24 ^s	20 ^s .4 ^s	50 ^s .03 ^s	26 ^s .2 ^s	26 ^s .94 ^s	39 ^s .3 ^s
11	29 ^s .65 ^s 0 ^s .41	23 ^s .6 3 ^s .2	50 ^s .57 0 ^s .54	26 ^s .5 0 ^s .3	27 ^s .27 0 ^s .33	37 ^s .9 1 ^s .4
21	30 ^s .00 0 ^s .35	27 ^s .0 3 ^s .4	51 ^s .07 0 ^s .50	27 ^s .4 0 ^s .9	27 ^s .57 0 ^s .30	36 ^s .9 1 ^s .0
31	30 ^s .28 0 ^s .28	30 ^s .7 3 ^s .7	51 ^s .50 0 ^s .43	28 ^s .7 1 ^s .3	27 ^s .83 0 ^s .26	36 ^s .2 0 ^s .7
Feb. 10	0 ^s .21	3 ^s .7	0 ^s .35	1 ^s .8	0 ^s .21	0 ^s .4
20	30 ^s .49 0 ^s .12	34 ^s .4 3 ^s .8	51 ^s .85 0 ^s .26	30 ^s .5 2 ^s .2	28 ^s .04 0 ^s .17	35 ^s .8 0 ^s .0
Mar. 1	30 ^s .61 0 ^s .05	38 ^s .2 3 ^s .7	52 ^s .11 0 ^s .16	32 ^s .7 2 ^s .5	28 ^s .21 0 ^s .12	35 ^s .8 0 ^s .3
11	30 ^s .66 0 ^s .02	41 ^s .9 3 ^s .5	52 ^s .27 0 ^s .06	35 ^s .2 2 ^s .5	28 ^s .33 0 ^s .07	36 ^s .1 0 ^s .6
21	30 ^s .64 0 ^s .09	45 ^s .4 3 ^s .3	52 ^s .33 0 ^s .02	37 ^s .7 2 ^s .6	28 ^s .40 0 ^s .02	36 ^s .7 0 ^s .8
31	30 ^s .55 0 ^s .14	48 ^s .7 3 ^s .0	52 ^s .31 0 ^s .11	40 ^s .3 2 ^s .6	28 ^s .42 0 ^s .01	37 ^s .5 0 ^s .9
Apr. 10	30 ^s .41 0 ^s .20	51 ^s .7 2 ^s .7	52 ^s .20 0 ^s .18	42 ^s .9 2 ^s .3	28 ^s .41 0 ^s .05	38 ^s .4 1 ^s .0
20	30 ^s .21 0 ^s .24	54 ^s .4 2 ^s .3	52 ^s .02 0 ^s .24	45 ^s .2 2 ^s .1	28 ^s .36 0 ^s .07	39 ^s .4 1 ^s .0
30	29 ^s .97 0 ^s .27	56 ^s .7 1 ^s .9	51 ^s .78 0 ^s .29	47 ^s .3 1 ^s .7	28 ^s .29 0 ^s .09	40 ^s .4 1 ^s .0
May 10	29 ^s .70 0 ^s .30	58 ^s .6 1 ^s .4	51 ^s .49 0 ^s .31	49 ^s .0 1 ^s .3	28 ^s .20 0 ^s .10	41 ^s .4 1 ^s .0
20	29 ^s .40 0 ^s .31	60 ^s .0 0 ^s .9	51 ^s .18 0 ^s .33	50 ^s .3 0 ^s .9	28 ^s .10 0 ^s .11	42 ^s .4 0 ^s .8
30	29 ^s .09 0 ^s .31	60 ^s .9 0 ^s .4	50 ^s .85 0 ^s .33	51 ^s .2 0 ^s .4	27 ^s .99 0 ^s .11	43 ^s .2 0 ^s .7
June 9	28 ^s .78 0 ^s .32	61 ^s .3 0 ^s .1	50 ^s .52 0 ^s .32	51 ^s .6 0 ^s .1	27 ^s .88 0 ^s .11	43 ^s .9 0 ^s .5
19	28 ^s .46 0 ^s .30	61 ^s .2 0 ^s .5	50 ^s .20 0 ^s .30	51 ^s .5 0 ^s .6	27 ^s .77 0 ^s .09	44 ^s .4 0 ^s .4
29	28 ^s .16 0 ^s .28	60 ^s .7 1 ^s .1	49 ^s .90 0 ^s .27	50 ^s .9 1 ^s .0	27 ^s .68 0 ^s .09	44 ^s .8 0 ^s .2
July 9	27 ^s .88 0 ^s .26	59 ^s .6 1 ^s .5	49 ^s .63 0 ^s .23	49 ^s .9 1 ^s .5	27 ^s .59 0 ^s .08	45 ^s .0 0 ^s .0
19	27 ^s .62 0 ^s .23	58 ^s .1 1 ^s .9	49 ^s .40 0 ^s .19	48 ^s .4 1 ^s .9	27 ^s .51 0 ^s .06	45 ^s .0 0 ^s .2
29	27 ^s .39 0 ^s .18	56 ^s .2 2 ^s .3	49 ^s .21 0 ^s .15	46 ^s .5 2 ^s .2	27 ^s .45 0 ^s .04	44 ^s .8 0 ^s .4
Aug. 8	27 ^s .21 0 ^s .13	53 ^s .9 2 ^s .5	49 ^s .06 0 ^s .09	44 ^s .3 2 ^s .6	27 ^s .41 0 ^s .02	44 ^s .4 0 ^s .6
18	27 ^s .08 0 ^s .08	51 ^s .4 2 ^s .6	48 ^s .97 0 ^s .03	41 ^s .7 2 ^s .8	27 ^s .39 0 ^s .00	43 ^s .8 0 ^s .8
28	27 ^s .00 0 ^s .01	48 ^s .8 2 ^s .8	48 ^s .94 0 ^s .02	38 ^s .9 3 ^s .1	27 ^s .39 0 ^s .03	43 ^s .0 1 ^s .1
Sept. 7	26 ^s .99 0 ^s .06	46 ^s .0 3 ^s .1	48 ^s .96 0 ^s .10	35 ^s .8 3 ^s .6	27 ^s .42 0 ^s .06	41 ^s .9 1 ^s .2
17	27 ^s .05 0 ^s .14	42 ^s .9 2 ^s .6	49 ^s .06 0 ^s .17	32 ^s .2 3 ^s .3	{27.48} 0 ^s .09	{42.7} 1 ^s .5
27	27 ^s .19 0 ^s .20	40 ^s .3 2 ^s .4	49 ^s .23 0 ^s .23	28 ^s .9 3 ^s .4	27 ^s .58 0 ^s .13	39 ^s .1 1 ^s .7
Oct. 7	27 ^s .39 0 ^s .28	37 ^s .9 2 ^s .0	49 ^s .46 0 ^s .30	25 ^s .5 3 ^s .4	27 ^s .71 0 ^s .17	37 ^s .4 1 ^s .8
17	27 ^s .67 0 ^s .35	35 ^s .9 1 ^s .6	49 ^s .76 0 ^s .36	22 ^s .1 3 ^s .2	27 ^s .88	0
27	28 ^s .02 0 ^s .41	34 ^s .3 1 ^s .1	50 ^s .12 0 ^s .43	18 ^s .9 3 ^s .1	28 ^s .09	2
Nov. 6	28 ^s .43 0 ^s .46	33 ^s .2 0 ^s .5	50 ^s .55 0 ^s .49	15 ^s .8 2 ^s .8	28 ^s .7	
16	28 ^s .89 0 ^s .50	32 ^s .7 0 ^s .1	51 ^s .04 0 ^s .54	13 ^s .0 2 ^s .5	28 ^s .6	
26	29 ^s .39 0 ^s .52	32 ^s .8 0 ^s .8	51 ^s .58 0 ^s .58	10 ^s .5 2 ^s .1	28	
Dec. 6	29 ^s .91 0 ^s .53	33 ^s .6 1 ^s .4	52 ^s .16 0 ^s .61	8 ^s .4 1 ^s .6		
16	30 ^s .44 0 ^s .51	35 ^s .0 1 ^s .9	52 ^s .77 0 ^s .62	6 ^s .8 1 ^s .1		
26	30 ^s .95 0 ^s .49	36 ^s .9 2 ^s .5	53 ^s .39 0 ^s .61	5 ^s .7 0 ^s .6		
36	31 ^s .44 0 ^s .45	39 ^s .4 2 ^s .9	54 ^s .00 0 ^s .58	5 ^s .1 0 ^s .0		
	31 ^s .89 0 ^s .45	42 ^s .3	54 ^s .58	5 ^s .1		

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.												
Day of the Month.	δ Hydræ et Crateris.			β Leonis.			γ Ursæ Majoris.					
	R. A.		Dec. South.	R. A.		Dec. North.	R. A.		Dec. North.			
	h	m	°	'	h	m	°	'				
	11	12	13	59	11	41	15	22				
	11	46	54	29								
Jan. 1	8 ^s ·52	0 ^s ·31	52 ^s ·2	2 ^s ·4	42 ^s ·67	0 ^s ·33	33 ^s ·8	1 ^s ·8	14 ^s ·97	0 ^s ·49	29 ^s ·7	0 ^s ·6
11	8 ^s ·83	0 ^s ·28	54 ^s ·6	2 ^s ·5	43 ^s ·00	0 ^s ·31	32 ^s ·0	1 ^s ·5	15 ^s ·46	0 ^s ·46	29 ^s ·1	0 ^s ·0
21	9 ^s ·11	0 ^s ·24	57 ^s ·1	2 ^s ·3	43 ^s ·31	0 ^s ·27	30 ^s ·5	1 ^s ·1	15 ^s ·92	0 ^s ·41	29 ^s ·1	0 ^s ·6
31	9 ^s ·35	0 ^s ·20	59 ^s ·4	2 ^s ·2	43 ^s ·58	0 ^s ·24	29 ^s ·4	0 ^s ·8	16 ^s ·33	0 ^s ·36	29 ^s ·7	1 ^s ·1
Feb 10	9 ^s ·55	0 ^s ·16	61 ^s ·6	2 ^s ·1	43 ^s ·82	0 ^s ·19	28 ^s ·6	0 ^s ·4	16 ^s ·69	0 ^s ·29	30 ^s ·8	1 ^s ·5
20	9 ^s ·71	0 ^s ·11	63 ^s ·7	1 ^s ·8	44 ^s ·01	0 ^s ·15	28 ^s ·2	0 ^s ·2	16 ^s ·98	0 ^s ·22	32 ^s ·3	1 ^s ·9
Mar. 1	9 ^s ·82	0 ^s ·06	65 ^s ·5	1 ^s ·6	44 ^s ·16	0 ^s ·10	28 ^s ·0	0 ^s ·2	17 ^s ·20	0 ^s ·15	34 ^s ·2	2 ^s ·2
11	9 ^s ·88	0 ^s ·03	67 ^s ·1	1 ^s ·3	44 ^s ·26	0 ^s ·07	28 ^s ·2	0 ^s ·4	17 ^s ·35	0 ^s ·07	36 ^s ·4	2 ^s ·4
21	9 ^s ·91	0 ^s ·01	68 ^s ·4	1 ^s ·1	44 ^s ·33	0 ^s ·02	28 ^s ·6	0 ^s ·7	17 ^s ·42	0 ^s ·00	38 ^s ·8	2 ^s ·5
31	9 ^s ·90	0 ^s ·04	69 ^s ·5	0 ^s ·8	44 ^s ·35	0 ^s ·01	29 ^s ·3	0 ^s ·7	17 ^s ·42	0 ^s ·06	41 ^s ·3	2 ^s ·4
Apr. 10	9 ^s ·86	0 ^s ·06	70 ^s ·3	0 ^s ·6	44 ^s ·34	0 ^s ·04	30 ^s ·0	0 ^s ·9	17 ^s ·36	0 ^s ·11	43 ^s ·7	2 ^s ·3
20	9 ^s ·80	0 ^s ·08	70 ^s ·9	0 ^s ·3	44 ^s ·30	0 ^s ·06	30 ^s ·9	0 ^s ·9	17 ^s ·25	0 ^s ·16	46 ^s ·0	2 ^s ·2
30	9 ^s ·72	0 ^s ·09	71 ^s ·2	0 ^s ·2	44 ^s ·24	0 ^s ·08	31 ^s ·8	0 ^s ·9	17 ^s ·09	0 ^s ·19	48 ^s ·2	1 ^s ·8
May 10	9 ^s ·63	0 ^s ·10	71 ^s ·4	0 ^s ·1	44 ^s ·16	0 ^s ·09	32 ^s ·7	0 ^s ·9	16 ^s ·90	0 ^s ·21	50 ^s ·0	1 ^s ·4
20	9 ^s ·53	0 ^s ·10	71 ^s ·3	0 ^s ·3	44 ^s ·07	0 ^s ·09	33 ^s ·6	0 ^s ·8	16 ^s ·69	0 ^s ·23	51 ^s ·4	1 ^s ·0
30	9 ^s ·43	0 ^s ·10	71 ^s ·0	0 ^s ·4	43 ^s ·98	0 ^s ·10	34 ^s ·4	0 ^s ·7	16 ^s ·46	0 ^s ·24	52 ^s ·4	0 ^s ·6
June 9	9 ^s ·33	0 ^s ·10	70 ^s ·6	0 ^s ·7	43 ^s ·88	0 ^s ·10	35 ^s ·1	0 ^s ·5	16 ^s ·22	0 ^s ·23	53 ^s ·0	0 ^s ·2
19	9 ^s ·23	0 ^s ·09	69 ^s ·9	0 ^s ·7	43 ^s ·78	0 ^s ·10	35 ^s ·6	0 ^s ·4	15 ^s ·99	0 ^s ·23	53 ^s ·2	0 ^s ·3
29	9 ^s ·14	0 ^s ·09	69 ^s ·2	0 ^s ·9	43 ^s ·68	0 ^s ·08	36 ^s ·0	0 ^s ·3	15 ^s ·76	0 ^s ·21	52 ^s ·9	0 ^s ·7
July 9	9 ^s ·05	0 ^s ·07	68 ^s ·3	1 ^s ·0	43 ^s ·60	0 ^s ·08	36 ^s ·3	0 ^s ·1	15 ^s ·55	0 ^s ·19	52 ^s ·2	1 ^s ·2
19	8 ^s ·98	0 ^s ·05	67 ^s ·3	1 ^s ·1	43 ^s ·52	0 ^s ·06	36 ^s ·4	0 ^s ·1	15 ^s ·36	0 ^s ·17	51 ^s ·0	1 ^s ·6
29	8 ^s ·93	0 ^s ·04	66 ^s ·2	1 ^s ·0	43 ^s ·46	0 ^s ·05	36 ^s ·3	0 ^s ·3	15 ^s ·19	0 ^s ·13	49 ^s ·4	2 ^s ·0
Aug. 8	8 ^s ·89	0 ^s ·01	65 ^s ·2	1 ^s ·1	43 ^s ·41	0 ^s ·03	36 ^s ·0	0 ^s ·5	15 ^s ·06	0 ^s ·10	47 ^s ·4	2 ^s ·3
18	8 ^s ·88	0 ^s ·02	64 ^s ·1	1 ^s ·0	43 ^s ·38	0 ^s ·01	35 ^s ·5	0 ^s ·7	14 ^s ·96	0 ^s ·06	45 ^s ·1	2 ^s ·6
28	8 ^s ·90	0 ^s ·04	63 ^s ·1	0 ^s ·8	43 ^s ·37	0 ^s ·02	34 ^s ·8	0 ^s ·8	14 ^s ·90	0 ^s ·01	42 ^s ·5	2 ^s ·9
Sept. 7	8 ^s ·94	0 ^s ·08	62 ^s ·3	0 ^s ·7	43 ^s ·39	0 ^s ·05	34 ^s ·0	1 ^s ·1	14 ^s ·89	0 ^s ·04	39 ^s ·6	3 ^s ·1
17	9 ^s ·02	0 ^s ·12	61 ^s ·6	0 ^s ·4	43 ^s ·43	0 ^s ·08	33 ^s ·8	1 ^s ·4	14 ^s ·93	0 ^s ·11	36 ^s ·5	3 ^s ·5
27	9 ^s ·14	0 ^s ·16	61 ^s ·2	0 ^s ·1	43 ^s ·53	0 ^s ·13	31 ^s ·4	1 ^s ·6	15 ^s ·04	0 ^s ·16	33 ^s ·0	3 ^s ·4
Oct. 7	9 ^s ·30	0 ^s ·19	61 ^s ·1	0 ^s ·2	43 ^s ·66	0 ^s ·16	29 ^s ·8	1 ^s ·8	15 ^s ·20	0 ^s ·21	29 ^s ·6	3 ^s ·4
17	9 ^s ·49	0 ^s ·23	61 ^s ·3	0 ^s ·6	43 ^s ·82	0 ^s ·21	28 ^s ·0	2 ^s ·0	15 ^s ·41	0 ^s ·28	26 ^s ·2	3 ^s ·4
27	9 ^s ·72	0 ^s ·27	61 ^s ·9	1 ^s ·0	44 ^s ·03	0 ^s ·25	26 ^s ·0	2 ^s ·2	15 ^s ·69	0 ^s ·34	22 ^s ·8	3 ^s ·2
Nov. 6	9 ^s ·99	0 ^s ·30	62 ^s ·9	1 ^s ·3	44 ^s ·28	0 ^s ·28	23 ^s ·8	2 ^s ·2	16 ^s ·03	0 ^s ·39	19 ^s ·6	3 ^s ·0
16	10 ^s ·29	0 ^s ·33	64 ^s ·2	1 ^s ·6	44 ^s ·56	0 ^s ·31	21 ^s ·6	2 ^s ·3	16 ^s ·42	0 ^s ·44	16 ^s ·6	2 ^s ·7
26	10 ^s ·62	0 ^s ·34	65 ^s ·8	1 ^s ·9	44 ^s ·87	0 ^s ·33	19 ^s ·3	2 ^s ·4	16 ^s ·86	0 ^s ·47	13 ^s ·9	2 ^s ·4
Dec. 6	10 ^s ·96	0 ^s ·34	67 ^s ·7	2 ^s ·2	45 ^s ·20	0 ^s ·35	16 ^s ·9	2 ^s ·2	17 ^s ·33	0 ^s ·49	11 ^s ·5	1 ^s ·9
16	11 ^s ·30	0 ^s ·34	69 ^s ·9	2 ^s ·3	45 ^s ·55	0 ^s ·35	14 ^s ·7	2 ^s ·1	17 ^s ·82	0 ^s ·51	9 ^s ·6	1 ^s ·5
26	11 ^s ·64	0 ^s ·33	72 ^s ·2	2 ^s ·5	45 ^s ·90	0 ^s ·34	12 ^s ·6	1 ^s ·9	18 ^s ·33	0 ^s ·50	8 ^s ·1	0 ^s ·9
36	11 ^s ·97		74 ^s ·7		46 ^s ·24		10 ^s ·7		18 ^s ·83		7 ^s ·2	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β Chamaleontis.		α ² Crucis.		β Corvi.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. South.
	h m	° '	h m	° '	h m	° '
	12 9	78 30	12 18	62 17	12 26	22 35
Jan. 1	57 ^s .30 ^s	23 ^o .2 [']	35 ^s .88 ^s	39 ^o .3 [']	49 ^s .08 ^s	51 ^o .5 [']
11	58 ^s .46 ^s	25 ^o .0 [']	36 ^s .45 ^s	41 ^o .4 [']	49 ^s .43 ^s	53 ^o .7 [']
21	59 ^s .53 ^s	27 ^o .4 [']	36 ^s .99 ^s	43 ^o .9 [']	49 ^s .76 ^s	56 ^o .1 [']
31	60 ^s .49 ^s	30 ^o .2 [']	37 ^s .47 ^s	46 ^o .8 [']	50 ^s .06 ^s	58 ^o .6 [']
	0 ^s .82 ^s	3 ^o .3 [']	0 ^s .42 ^s	3 ^o .2 [']	0 ^s .27 ^s	2 ^o .4 [']
Feb. 10	61 ^s .31 ^s	33 ^o .5 [']	37 ^s .89 ^s	50 ^o .0 [']	50 ^s .33 ^s	61 ^o .0 [']
20	61 ^s .98 ^s	37 ^o .1 [']	38 ^s .25 ^s	53 ^o .4 [']	50 ^s .57 ^s	63 ^o .3 [']
Mar. 1	62 ^s .49 ^s	40 ^o .8 [']	38 ^s .53 ^s	57 ^o .0 [']	50 ^s .76 ^s	65 ^o .5 [']
11	62 ^s .83 ^s	44 ^o .7 [']	38 ^s .73 ^s	60 ^o .6 [']	50 ^s .91 ^s	67 ^o .6 [']
	0 ^s .16 ^s	3 ^o .9 [']	0 ^s .13 ^s	3 ^o .6 [']	0 ^s .11 ^s	1 ^o .9 [']
21	62 ^s .99 ^s	48 ^o .6 [']	38 ^s .86 ^s	64 ^o .2 [']	51 ^s .02 ^s	69 ^o .5 [']
31	63 ^s .00 ^s	52 ^o .4 [']	38 ^s .92 ^s	67 ^o .6 [']	51 ^s .09 ^s	71 ^o .1 [']
Apr. 10	62 ^s .84 ^s	56 ^o .1 [']	38 ^s .92 ^s	70 ^o .9 [']	51 ^s .13 ^s	72 ^o .5 [']
20	62 ^s .54 ^s	59 ^o .6 [']	38 ^s .85 ^s	74 ^o .0 [']	51 ^s .13 ^s	73 ^o .7 [']
	0 ^s .44 ^s	3 ^o .2 [']	0 ^s .13 ^s	2 ^o .7 [']	0 ^s .02 ^s	0 ^o .9 [']
30	62 ^s .10 ^s	62 ^o .8 [']	38 ^s .72 ^s	76 ^o .7 [']	51 ^s .11 ^s	74 ^o .6 [']
May 10	61 ^s .53 ^s	65 ^o .6 [']	38 ^s .55 ^s	79 ^o .1 [']	51 ^s .07 ^s	75 ^o .3 [']
20	60 ^s .85 ^s	68 ^o .1 [']	38 ^s .33 ^s	81 ^o .2 [']	51 ^s .01 ^s	75 ^o .8 [']
30	60 ^s .08 ^s	70 ^o .1 [']	38 ^s .07 ^s	82 ^o .8 [']	50 ^s .94 ^s	76 ^o .1 [']
	0 ^s .84 ^s	1 ^o .5 [']	0 ^s .29 ^s	1 ^o .2 [']	0 ^s .09 ^s	0 ^o .0 [']
June 9	59 ^s .24 ^s	71 ^o .6 [']	37 ^s .78 ^s	84 ^o .0 [']	50 ^s .85 ^s	76 ^o .1 [']
19	58 ^s .34 ^s	72 ^o .6 [']	37 ^s .47 ^s	84 ^o .7 [']	50 ^s .75 ^s	75 ^o .9 [']
29	57 ^s .41 ^s	73 ^o .1 [']	37 ^s .14 ^s	84 ^o .9 [']	50 ^s .64 ^s	75 ^o .5 [']
July 9	56 ^s .47 ^s	73 ^o .0 [']	36 ^s .81 ^s	84 ^o .6 [']	50 ^s .54 ^s	74 ^o .9 [']
	0 ^s .91 ^s	0 ^o .7 [']	0 ^s .33 ^s	0 ^o .8 [']	0 ^s .11 ^s	0 ^o .8 [']
19	55 ^s .56 ^s	72 ^o .3 [']	36 ^s .48 ^s	83 ^o .8 [']	50 ^s .43 ^s	74 ^o .1 [']
29	54 ^s .70 ^s	71 ^o .1 [']	36 ^s .17 ^s	82 ^o .6 [']	50 ^s .32 ^s	73 ^o .2 [']
Aug. 8	53 ^s .92 ^s	69 ^o .5 [']	35 ^s .89 ^s	80 ^o .9 [']	50 ^s .23 ^s	72 ^o .1 [']
18	53 ^s .25 ^s	67 ^o .4 [']	35 ^s .64 ^s	78 ^o .9 [']	50 ^s .15 ^s	71 ^o .0 [']
	0 ^s .54 ^s	2 ^o .5 [']	0 ^s .20 ^s	2 ^o .3 [']	0 ^s .06 ^s	1 ^o .1 [']
28	52 ^s .71 ^s	64 ^o .9 [']	35 ^s .44 ^s	76 ^o .6 [']	50 ^s .09 ^s	69 ^o .9 [']
Sept. 7	52 ^s .33 ^s	62 ^o .2 [']	35 ^s .31 ^s	74 ^o .1 [']	50 ^s .05 ^s	68 ^o .8 [']
17	52 ^s .14 ^s	59 ^o .3 [']	35 ^s .25 ^s	71 ^o .5 [']	50 ^s .05 ^s	67 ^o .7 [']
27	52 ^s .16 ^s	56 ^o .0 [']	{35.29}	{88.8}	50 ^s .09 ^s	66 ^o .8 [']
	0 ^s .23 ^s	2 ^o .9 [']	0 ^s .12 ^s	2 ^o .5 [']	0 ^s .09 ^s	0 ^o .8 [']
Oct. 7	52 ^s .39 ^s	53 ^o .1 [']	35 ^s .41 ^s	66 ^o .1 [']	50 ^s .18 ^s	66 ^o .0 [']
17	52 ^s .83 ^s	50 ^o .4 [']	35 ^s .62 ^s	63 ^o .8 [']	50 ^s .31 ^s	65 ^o .7 [']
27	53 ^s .47 ^s	48 ^o .0 [']	35 ^s .92 ^s	61 ^o .8 [']	50 ^s .49 ^s	65 ^o .6 [']
Nov. 6	54 ^s .28 ^s	46 ^o .0 [']	36 ^s .30 ^s	60 ^o .2 [']	50 ^s .71 ^s	65 ^o .9 [']
	0 ^s .97 ^s	1 ^o .5 [']	0 ^s .46 ^s	1 ^o .1 [']	0 ^s .26 ^s	0 ^o .6 [']
16	55 ^s .25 ^s	44 ^o .5 [']	36 ^s .76 ^s		50 ^s .97 ^s	66 ^o .5 [']
26	56 ^s .35 ^s	43 ^o .5 [']	37 ^s .28 ^s		51 ^s .28 ^s	67 ^o .5 [']
Dec. 6	57 ^s .53 ^s	43 ^o .2 [']	37 ^s .85 ^s		51 ^s .61 ^s	67 ^o .5 [']
16	58 ^s .76 ^s	43 ^o .6 [']	38 ^s .44 ^s		51 ^s .96 ^s	67 ^o .5 [']
	1 ^s .23 ^s	0 ^o .9 [']	0 ^s		0 ^s .36 ^s	1 ^o .4 [']
26	59 ^s .99 ^s	44 ^o .5 [']	39 ^s .04 ^s			1 ^o .7 [']
36	61 ^s .21 ^s	46 ^o .1 [']	39 ^s .6 ^s			1 ^o .7 [']

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	12 Canum Venaticorum.		α Virginis. (Spica)			η Ursae Majoris.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. North.	
	h m	o ' "	h m	o ' "	h m	o ' "	
	12 49	39 5	13 17	10 24	13 41	50 1	
Jan. 1	16 ^s .93 ^a 0 ^{.40}	36 ["] .5 ["] 1 ^{.7}	35 ^s .84 ^a 0 ^{.35}	27 ["] .7 ["] 2 ^{.1}	51 ^s .31 ^a 0 ^{.44}	43 ["] .6 ["] 2 ^{.0}	
11	17 ^s .33 ^a 0 ^{.39}	34 ["] .8 ["] 1 ^{.2}	36 ^s .19 ^a 0 ^{.33}	29 ["] .8 ["] 2 ^{.1}	51 ^s .75 ^a 0 ^{.45}	41 ["] .6 ["] 1 ^{.3}	
21	17 ^s .72 ^a 0 ^{.37}	33 ["] .6 ["] 0 ^{.6}	36 ^s .52 ^a 0 ^{.32}	31 ["] .9 ["] 2 ^{.0}	52 ^s .20 ^a 0 ^{.44}	40 ["] .1 ["] 0 ^{.9}	
31	18 ^s .09 ^a 0 ^{.33}	33 ["] .0 ["] 0 ^{.1}	36 ^s .84 ^a 0 ^{.29}	33 ["] .9 ["] 1 ^{.9}	52 ^s .64 ^a 0 ^{.41}	39 ["] .2 ["] 0 ^{.2}	
Feb. 10	18 ^s .42 ^a 0 ^{.29}	32 ["] .9 ["] 0 ^{.5}	37 ^s .13 ^a 0 ^{.27}	35 ["] .8 ["] 1 ^{.8}	53 ^s .05 ^a 0 ^{.38}	39 ["] .0 ["] 0 ^{.4}	
20	18 ^s .71 ^a 0 ^{.25}	33 ["] .4 ["] 0 ^{.9}	37 ^s .40 ^a 0 ^{.23}	37 ["] .6 ["] 1 ^{.5}	53 ^s .43 ^a 0 ^{.34}	39 ["] .4 ["] 1 ^{.0}	
Mar. 1	18 ^s .96 ^a 0 ^{.20}	34 ["] .3 ["] 1 ^{.3}	37 ^s .63 ^a 0 ^{.19}	39 ["] .1 ["] 1 ^{.3}	53 ^s .77 ^a 0 ^{.29}	40 ["] .4 ["] 1 ^{.5}	
11	19 ^s .16 ^a 0 ^{.14}	35 ["] .6 ["] 1 ^{.6}	37 ^s .82 ^a 0 ^{.16}	40 ["] .4 ["] 1 ^{.1}	54 ^s .06 ^a 0 ^{.23}	41 ["] .9 ["] 1 ^{.9}	
21	19 ^s .30 ^a 0 ^{.09}	37 ["] .2 ["] 1 ^{.9}	37 ^s .98 ^a 0 ^{.13}	41 ["] .5 ["] 0 ^{.9}	54 ^s .29 ^a 0 ^{.17}	43 ["] .8 ["] 2 ^{.2}	
31	19 ^s .39 ^a 0 ^{.05}	39 ["] .1 ["] 2 ^{.1}	38 ^s .11 ^a 0 ^{.09}	42 ["] .4 ["] 0 ^{.7}	54 ^s .46 ^a 0 ^{.11}	46 ["] .0 ["] 2 ^{.5}	
Apr. 10	19 ^s .44 ^a 0 ^{.00}	41 ["] .2 ["] 2 ^{.1}	38 ^s .20 ^a 0 ^{.06}	43 ["] .1 ["] 0 ^{.4}	54 ^s .57 ^a 0 ^{.06}	48 ["] .5 ["] 2 ^{.6}	
20	19 ^s .44 ^a 0 ^{.03}	43 ["] .3 ["] 2 ^{.1}	38 ^s .26 ^a 0 ^{.03}	43 ["] .5 ["] 0 ^{.3}	54 ^s .63 ^a 0 ^{.01}	51 ["] .1 ["] 2 ^{.6}	
30	19 ^s .41 ^a 0 ^{.06}	45 ["] .4 ["] 1 ^{.9}	38 ^s .29 ^a 0 ^{.01}	43 ["] .8 ["] 0 ^{.1}	54 ^s .64 ^a 0 ^{.04}	53 ["] .7 ["] 2 ^{.6}	
May 10	19 ^s .35 ^a 0 ^{.10}	47 ["] .3 ["] 1 ^{.8}	38 ^s .30 ^a 0 ^{.01}	43 ["] .9 ["] 0 ^{.0}	54 ^s .60 ^a 0 ^{.09}	56 ["] .3 ["] 2 ^{.4}	
20	19 ^s .25 ^a 0 ^{.12}	49 ["] .1 ["] 1 ^{.6}	38 ^s .29 ^a 0 ^{.04}	43 ["] .9 ["] 0 ^{.2}	54 ^s .51 ^a 0 ^{.12}	58 ["] .7 ["] 2 ^{.1}	
30	19 ^s .13 ^a 0 ^{.13}	50 ["] .7 ["] 1 ^{.3}	38 ^s .25 ^a 0 ^{.05}	43 ["] .7 ["] 0 ^{.2}	54 ^s .39 ^a 0 ^{.16}	60 ["] .8 ["] 1 ^{.8}	
June 9	19 ^s .00 ^a 0 ^{.14}	52 ["] .0 ["] 0 ^{.9}	38 ^s .20 ^a 0 ^{.07}	43 ["] .5 ["] 0 ^{.4}	54 ^s .23 ^a 0 ^{.18}	62 ["] .6 ["] 1 ^{.4}	
19	18 ^s .86 ^a 0 ^{.16}	52 ["] .9 ["] 0 ^{.6}	38 ^s .13 ^a 0 ^{.08}	43 ["] .1 ["] 0 ^{.4}	54 ^s .05 ^a 0 ^{.20}	64 ["] .0 ["] 1 ^{.0}	
29	18 ^s .70 ^a 0 ^{.15}	53 ["] .5 ["] 0 ^{.2}	38 ^s .05 ^a 0 ^{.10}	42 ["] .7 ["] 0 ^{.5}	53 ^s .85 ^a 0 ^{.22}	65 ["] .0 ["] 0 ^{.6}	
July 9	18 ^s .55 ^a 0 ^{.15}	53 ["] .7 ["] 0 ^{.2}	37 ^s .95 ^a 0 ^{.10}	42 ["] .2 ["] 0 ^{.5}	53 ^s .63 ^a 0 ^{.23}	65 ["] .6 ["] 0 ^{.2}	
19	18 ^s .40 ^a 0 ^{.15}	53 ["] .5 ["] 0 ^{.5}	37 ^s .85 ^a 0 ^{.10}	41 ["] .7 ["] 0 ^{.6}	53 ^s .40 ^a 0 ^{.24}	65 ["] .8 ["] 0 ^{.3}	
29	18 ^s .25 ^a 0 ^{.14}	53 ["] .0 ["] 1 ^{.0}	37 ^s .75 ^a 0 ^{.11}	41 ["] .1 ["] 0 ^{.6}	53 ^s .16 ^a 0 ^{.23}	65 ["] .5 ["] 0 ^{.8}	
Aug. 8	18 ^s .11 ^a 0 ^{.13}	52 ["] .0 ["] 1 ^{.3}	37 ^s .64 ^a 0 ^{.10}	40 ["] .5 ["] 0 ^{.5}	52 ^s .93 ^a 0 ^{.22}	64 ["] .7 ["] 1 ^{.3}	
18	17 ^s .98 ^a 0 ^{.10}	50 ["] .7 ["] 1 ^{.6}	37 ^s .54 ^a 0 ^{.08}	40 ["] .0 ["] 0 ^{.6}	52 ^s .71 ^a 0 ^{.20}	63 ["] .4 ["] 1 ^{.6}	
28	17 ^s .88 ^a 0 ^{.07}	49 ["] .1 ["] 2 ^{.0}	37 ^s .46 ^a 0 ^{.07}	39 ["] .4 ["] 0 ^{.4}	52 ^s .51 ^a 0 ^{.18}	61 ["] .8 ["] 2 ^{.1}	
Sept. 7	17 ^s .81 ^a 0 ^{.04}	47 ["] .1 ["] 2 ^{.3}	37 ^s .39 ^a 0 ^{.04}	39 ["] .0 ["] 0 ^{.4}	52 ^s .33 ^a 0 ^{.15}	59 ["] .7 ["] 2 ^{.5}	
17	17 ^s .77 ^a 0 ^{.01}	44 ["] .8 ["] 2 ^{.6}	37 ^s .35 ^a 0 ^{.01}	38 ["] .6 ["] 0 ^{.2}	52 ^s .18 ^a 0 ^{.10}	57 ["] .2 ["] 2 ^{.8}	
27	17 ^s .76 ^a 0 ^{.05}	42 ["] .2 ["] 3 ^{.1}	37 ^s .34 ^a 0 ^{.02}	38 ["] .4 ["] 0 ^{.1}	52 ^s .08 ^a 0 ^{.05}	54 ["] .4 ["] 3 ^{.1}	
Oct. 7	17 ^s .81 ^a 0 ^{.10}	39 ["] .1 ["] 3 ^{.0}	37 ^s .36 ^a 0 ^{.08}	38 ["] .5 ["] 0 ^{.3}	52 ^s .03 ^a 0 ^{.00}	51 ["] .3 ["] 3 ^{.3}	
17	17 ^s .91 ^a 0 ^{.14}	36 ["] .1 ["] 3 ^{.1}	37 ^s .44 ^a 0 ^{.12}	38 ["] .8 ["] 0 ^{.5}	52 ^s .03 ^a 0 ^{.07}	48 ["] .0 ["] 3 ^{.9}	
27	18 ^s .05 ^a 0 ^{.20}	33 ["] .0 ["] 3 ^{.2}	37 ^s .56 ^a 0 ^{.17}	39 ["] .3 ["] 0 ^{.8}	52 ^s .10 ^a 0 ^{.13}	44 ["] .1 ["] 3 ^{.6}	
Nov. 6	18 ^s .25 ^a 0 ^{.25}	29 ["] .8 ["] 3 ^{.2}	37 ^s .73 ^a 0 ^{.21}	40 ["] .1 ["] 1 ^{.1}	52 ^s .23 ^a 0 ^{.20}	40 ["] .5 ["] 3 ^{.6}	
16	18 ^s .50 ^a 0 ^{.30}	26 ["] .6 ["] 3 ^{.1}	37 ^s .94 ^a 0 ^{.25}	41 ["] .2 ["] 1 ^{.3}	52 ^s .43 ^a 0 ^{.26}	36 ["] .9 ["] 3 ^{.6}	
26	18 ^s .80 ^a 0 ^{.34}	23 ["] .5 ["] 2 ^{.9}	38 ^s .19 ^a 0 ^{.29}	42 ["] .5 ["] 1 ^{.6}	52 ^s .69 ^a 0 ^{.32}	33 ["] .3 ["] 3 ^{.3}	
Dec. 6	19 ^s .14 ^a 0 ^{.37}	20 ["] .6 ["] 2 ^{.7}	38 ^s .48 ^a 0 ^{.32}	44 ["] .1 ["] 1 ^{.8}	53 ^s .01 ^a 0 ^{.37}	30 ["] .0 ["] 3 ^{.1}	
16	19 ^s .51 ^a 0 ^{.39}	17 ["] .9 ["] 2 ^{.3}	38 ^s .80 ^a 0 ^{.34}	45 ["] .9 ["] 2 ^{.0}	53 ^s .38 ^a 0 ^{.41}	26 ["] .9 ["] 2 ^{.7}	
26	19 ^s .90 ^a 0 ^{.40}	15 ["] .6 ["] 1 ^{.9}	39 ^s .14 ^a 0 ^{.34}	47 ["] .9 ["] 2 ^{.1}	53 ^s .79 ^a 0 ^{.43}	24 ["] .2 ["] 2 ^{.3}	
36	20 ^s .30 ^a	13 ["] .7 ["]	39 ^s .48 ^a	50 ["] .0 ["]	54 ^s .22 ^a	21 ["] .9 ["]	

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	γ Argus.		α Ursæ Majoris.		δ Leonis.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	h m	° '	h m	° '	h m	° '
	10 39	58 55	10 54	62 31	11 6	21 18
Jan. 1	29 ^s .24 ^s 0 ^s .41 ^s	20 ^s .4 ^s "	50 ^s .03 ^s "	26 ^s .2 ^s "	26 ^s .94 ^s "	39 ^s .3 ^s "
11	29 ^s .65 ^s 0 ^s .35 ^s	23 ^s .6 3 ^s .2	50 ^s .57 ^s 0 ^s .54 ^s	26 ^s .5 0 ^s .3	27 ^s .27 ^s 0 ^s .33 ^s	37 ^s .9 1 ^s .4
21	30 ^s .00 ^s 0 ^s .28 ^s	27 ^s .0 3 ^s .4	51 ^s .07 ^s 0 ^s .50 ^s	27 ^s .4 0 ^s .9	27 ^s .57 ^s 0 ^s .30 ^s	36 ^s .9 1 ^s .0
31	30 ^s .28 ^s 0 ^s .21 ^s	30 ^s .7 3 ^s .7	51 ^s .50 ^s 0 ^s .43 ^s	28 ^s .7 1 ^s .3	27 ^s .83 ^s 0 ^s .26 ^s	36 ^s .2 0 ^s .7
Feb. 10	30 ^s .49 ^s 0 ^s .12 ^s	34 ^s .4 3 ^s .7	51 ^s .85 ^s 0 ^s .35 ^s	30 ^s .5 1 ^s .8	28 ^s .04 ^s 0 ^s .21 ^s	35 ^s .8 0 ^s .4
20	30 ^s .61 ^s 0 ^s .05 ^s	38 ^s .2 3 ^s .8	52 ^s .11 ^s 0 ^s .26 ^s	32 ^s .7 2 ^s .2	28 ^s .21 ^s 0 ^s .17 ^s	35 ^s .8 0 ^s .0
Mar. 1	30 ^s .66 ^s 0 ^s .02 ^s	41 ^s .9 3 ^s .7	52 ^s .27 ^s 0 ^s .16 ^s	35 ^s .2 2 ^s .5	28 ^s .33 ^s 0 ^s .12 ^s	36 ^s .1 0 ^s .3
11	30 ^s .64 ^s 0 ^s .09 ^s	45 ^s .4 3 ^s .5	52 ^s .33 ^s 0 ^s .06 ^s	37 ^s .7 2 ^s .5	28 ^s .40 ^s 0 ^s .07 ^s	36 ^s .7 0 ^s .6
21	30 ^s .55 ^s 0 ^s .14 ^s	48 ^s .7 3 ^s .3	52 ^s .31 ^s 0 ^s .02 ^s	40 ^s .3 2 ^s .6	28 ^s .42 ^s 0 ^s .02 ^s	37 ^s .5 0 ^s .8
31	30 ^s .41 ^s 0 ^s .20 ^s	51 ^s .7 3 ^s .0	52 ^s .20 ^s 0 ^s .11 ^s	42 ^s .9 2 ^s .6	28 ^s .41 ^s 0 ^s .01 ^s	37 ^s .5 0 ^s .9
Apr. 10	30 ^s .21 ^s 0 ^s .24 ^s	54 ^s .4 2 ^s .7	52 ^s .02 ^s 0 ^s .18 ^s	45 ^s .2 2 ^s .3	28 ^s .36 ^s 0 ^s .05 ^s	38 ^s .4 1 ^s .0
20	29 ^s .97 ^s 0 ^s .27 ^s	56 ^s .7 2 ^s .3	51 ^s .78 ^s 0 ^s .24 ^s	47 ^s .3 2 ^s .1	28 ^s .29 ^s 0 ^s .07 ^s	39 ^s .4 1 ^s .0
30	29 ^s .70 ^s 0 ^s .30 ^s	58 ^s .6 1 ^s .9	51 ^s .49 ^s 0 ^s .29 ^s	49 ^s .0 1 ^s .7	28 ^s .20 ^s 0 ^s .09 ^s	40 ^s .4 1 ^s .0
May 10	29 ^s .40 ^s 0 ^s .31 ^s	60 ^s .0 1 ^s .4	51 ^s .18 ^s 0 ^s .31 ^s	49 ^s .0 1 ^s .3	28 ^s .10 ^s 0 ^s .10 ^s	41 ^s .4 1 ^s .0
20	29 ^s .09 ^s 0 ^s .31 ^s	60 ^s .9 0 ^s .9	50 ^s .85 ^s 0 ^s .33 ^s	50 ^s .3 0 ^s .9	27 ^s .99 ^s 0 ^s .11 ^s	42 ^s .4 0 ^s .8
30	28 ^s .78 ^s 0 ^s .32 ^s	61 ^s .3 0 ^s .4	50 ^s .52 ^s 0 ^s .33 ^s	51 ^s .2 0 ^s .4	27 ^s .88 ^s 0 ^s .11 ^s	43 ^s .2 0 ^s .7
June 9	28 ^s .46 ^s 0 ^s .30 ^s	61 ^s .2 0 ^s .1	50 ^s .20 ^s 0 ^s .32 ^s	51 ^s .5 0 ^s .1	27 ^s .77 ^s 0 ^s .11 ^s	43 ^s .9 0 ^s .5
19	28 ^s .16 ^s 0 ^s .28 ^s	60 ^s .7 0 ^s .5	49 ^s .90 ^s 0 ^s .30 ^s	50 ^s .9 0 ^s .6	27 ^s .68 ^s 0 ^s .09 ^s	44 ^s .4 0 ^s .4
29	27 ^s .88 ^s 0 ^s .26 ^s	59 ^s .6 1 ^s .1	49 ^s .63 ^s 0 ^s .27 ^s	50 ^s .9 1 ^s .0	27 ^s .68 ^s 0 ^s .09 ^s	44 ^s .8 0 ^s .2
July 9	27 ^s .62 ^s 0 ^s .23 ^s	58 ^s .1 1 ^s .5	49 ^s .40 ^s 0 ^s .23 ^s	49 ^s .9 1 ^s .5	27 ^s .59 ^s 0 ^s .08 ^s	45 ^s .0 0 ^s .0
19	27 ^s .39 ^s 0 ^s .18 ^s	56 ^s .2 1 ^s .9	49 ^s .21 ^s 0 ^s .19 ^s	48 ^s .4 1 ^s .9	27 ^s .51 ^s 0 ^s .06 ^s	45 ^s .0 0 ^s .2
29	27 ^s .21 ^s 0 ^s .13 ^s	53 ^s .9 2 ^s .3	49 ^s .06 ^s 0 ^s .15 ^s	46 ^s .5 2 ^s .2	27 ^s .45 ^s 0 ^s .04 ^s	44 ^s .8 0 ^s .4
Aug. 8	27 ^s .08 ^s 0 ^s .08 ^s	51 ^s .4 2 ^s .5	48 ^s .97 ^s 0 ^s .09 ^s	44 ^s .3 2 ^s .6	27 ^s .41 ^s 0 ^s .02 ^s	44 ^s .4 0 ^s .6
18	27 ^s .00 ^s 0 ^s .01 ^s	48 ^s .8 2 ^s .6	48 ^s .94 ^s 0 ^s .03 ^s	41 ^s .7 2 ^s .8	27 ^s .39 ^s 0 ^s .00 ^s	43 ^s .8 0 ^s .8
28	26 ^s .99 ^s 0 ^s .06 ^s	46 ^s .0 2 ^s .8	48 ^s .96 ^s 0 ^s .02 ^s	38 ^s .9 3 ^s .1	27 ^s .39 ^s 0 ^s .03 ^s	43 ^s .0 1 ^s .1
Sept. 7	27 ^s .05 ^s 0 ^s .14 ^s	42 ^s .9 3 ^s .1	49 ^s .06 ^s 0 ^s .10 ^s	35 ^s .8 3 ^s .6	27 ^s .42 ^s 0 ^s .06 ^s	41 ^s .9 1 ^s .2
17	27 ^s .19 ^s 0 ^s .20 ^s	40 ^s .3 2 ^s .6	49 ^s .23 ^s 0 ^s .17 ^s	32 ^s .2 3 ^s .3	{27 ^s .48 ^s } 0 ^s .09 ^s	{40 ^s .3} 1 ^s .5
27	27 ^s .39 ^s 0 ^s .28 ^s	37 ^s .9 2 ^s .4	49 ^s .46 ^s 0 ^s .23 ^s	28 ^s .9 3 ^s .4	27 ^s .58 ^s 0 ^s .13 ^s	39 ^s .1 1 ^s .7
Oct. 7	27 ^s .67 ^s 0 ^s .35 ^s	35 ^s .9 2 ^s .0	49 ^s .76 ^s 0 ^s .30 ^s	25 ^s .5 3 ^s .4	27 ^s .71 ^s 0 ^s .17 ^s	37 ^s .4 1 ^s .8
17	28 ^s .02 ^s 0 ^s .41 ^s	34 ^s .3 1 ^s .6	50 ^s .12 ^s 0 ^s .36 ^s	22 ^s .1 3 ^s .2	27 ^s .88 ^s 0 ^s .21 ^s	35 ^s .6 2 ^s .0
27	28 ^s .43 ^s 0 ^s .46 ^s	33 ^s .2 1 ^s .1	50 ^s .55 ^s 0 ^s .43 ^s	18 ^s .9 3 ^s .1	28 ^s .09 ^s 0 ^s .24 ^s	33 ^s .6 2 ^s .2
Nov. 6	28 ^s .89 ^s 0 ^s .50 ^s	32 ^s .7 0 ^s .5	51 ^s .04 ^s 0 ^s .49 ^s	15 ^s .8 2 ^s .8	28 ^s .33 ^s 0 ^s .28 ^s	31 ^s .4 2 ^s .2
16	29 ^s .39 ^s 0 ^s .52 ^s	32 ^s .8 0 ^s .1	51 ^s .58 ^s 0 ^s .54 ^s	13 ^s .0 2 ^s .5	28 ^s .61 ^s 0 ^s .31 ^s	29 ^s .2 2 ^s .3
26	29 ^s .91 ^s 0 ^s .53 ^s	33 ^s .6 0 ^s .8	52 ^s .16 ^s 0 ^s .58 ^s	10 ^s .5 2 ^s .1	28 ^s .92 ^s 0 ^s .34 ^s	26 ^s .9 2 ^s .2
Dec. 6	30 ^s .44 ^s 0 ^s .51 ^s	35 ^s .0 1 ^s .4	52 ^s .77 ^s 0 ^s .61 ^s	8 ^s .4 1 ^s .6	29 ^s .26 ^s 0 ^s .35 ^s	24 ^s .7 2 ^s .2
16	30 ^s .95 ^s 0 ^s .49 ^s	36 ^s .9 1 ^s .9	53 ^s .39 ^s 0 ^s .62 ^s	6 ^s .8 1 ^s .1	29 ^s .61 ^s 0 ^s .36 ^s	22 ^s .5 2 ^s .1
26	31 ^s .44 ^s 0 ^s .45 ^s	39 ^s .4 2 ^s .5	54 ^s .00 ^s 0 ^s .61 ^s	5 ^s .7 0 ^s .6	29 ^s .97 ^s 0 ^s .36 ^s	20 ^s .4 1 ^s .8
36	31 ^s .89 ^s 0 ^s .45 ^s	42 ^s .3 2 ^s .9	54 ^s .58 ^s 0 ^s .58 ^s	5 ^s .1 0 ^s .0	30 ^s .33 ^s 0 ^s .34 ^s	18 ^s .6 1 ^s .5

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α^3 Centauri.			ϵ Bootis.			α^3 Libra.		
	R. A.	Dec. South.		R. A.	Dec. North.		R. A.	Dec. South.	
	h m	^o ' "	^o ' "	h m	^o ' "	^o ' "	h m	^o ' "	
	14 29	60 13	" "	14 38	27 40	" "	14 42	15 26	
Jan. 1	49 ^a 25 ^a	55 ^a 5 ^a	" "	40 ^a 87 ^a	48 ^a 2 ^a	" "	53 ^a 78 ^a	25 ^a 7 ^a	
11	49 ^a 82 ^a 0 ^a 57 ^a	55 ^a 9 ^a 0 ^a 8 ^a	0 ^a 4 ^a	41 ^a 21 ^a 0 ^a 34 ^a	45 ^a 7 ^a 2 ^a 5 ^a	0 ^a 34 ^a	54 ^a 11 ^a 0 ^a 33 ^a	27 ^a 3 ^a 1 ^a 6 ^a	
21	50 ^a 40 ^a 0 ^a 58 ^a	56 ^a 7 ^a 0 ^a 8 ^a	0 ^a 8 ^a	41 ^a 55 ^a 0 ^a 34 ^a	43 ^a 6 ^a 2 ^a 1 ^a	0 ^a 34 ^a	54 ^a 45 ^a 0 ^a 34 ^a	29 ^a 0 ^a 1 ^a 7 ^a	
31	50 ^a 97 ^a 0 ^a 57 ^a	58 ^a 0 ^a 1 ^a 3 ^a	1 ^a 3 ^a	41 ^a 90 ^a 0 ^a 35 ^a	41 ^a 9 ^a 1 ^a 7 ^a	1 ^a 7 ^a	54 ^a 79 ^a 0 ^a 34 ^a	30 ^a 8 ^a 1 ^a 8 ^a	
		0 ^a 55 ^a	1 ^a 7 ^a	0 ^a 34 ^a	1 ^a 2 ^a	0 ^a 33 ^a		1 ^a 7 ^a	
Feb. 10	51 ^a 52 ^a 0 ^a 55 ^a	59 ^a 7 ^a 2 ^a 0 ^a	2 ^a 0 ^a	42 ^a 24 ^a 0 ^a 33 ^a	40 ^a 7 ^a 0 ^a 7 ^a	0 ^a 7 ^a	55 ^a 12 ^a 0 ^a 32 ^a	32 ^a 5 ^a 1 ^a 5 ^a	
20	52 ^a 04 ^a 0 ^a 52 ^a	61 ^a 7 ^a 2 ^a 3 ^a	2 ^a 3 ^a	42 ^a 57 ^a 0 ^a 30 ^a	40 ^a 0 ^a 0 ^a 2 ^a	0 ^a 2 ^a	55 ^a 44 ^a 0 ^a 29 ^a	34 ^a 0 ^a 1 ^a 5 ^a	
Mar. 1	52 ^a 53 ^a 0 ^a 49 ^a	64 ^a 0 ^a 2 ^a 6 ^a	2 ^a 6 ^a	42 ^a 87 ^a 0 ^a 27 ^a	39 ^a 8 ^a 0 ^a 3 ^a	0 ^a 3 ^a	55 ^a 73 ^a 0 ^a 27 ^a	35 ^a 5 ^a 1 ^a 3 ^a	
11	52 ^a 97 ^a 0 ^a 44 ^a	66 ^a 6 ^a 2 ^a 6 ^a	2 ^a 6 ^a	43 ^a 14 ^a 0 ^a 24 ^a	40 ^a 1 ^a 0 ^a 8 ^a	0 ^a 8 ^a	56 ^a 00 ^a 0 ^a 24 ^a	36 ^a 8 ^a 1 ^a 1 ^a	
		0 ^a 39 ^a	2 ^a 7 ^a	0 ^a 24 ^a	0 ^a 8 ^a	0 ^a 24 ^a		1 ^a 1 ^a	
21	53 ^a 36 ^a 0 ^a 33 ^a	69 ^a 3 ^a 2 ^a 8 ^a	2 ^a 8 ^a	43 ^a 38 ^a 0 ^a 20 ^a	40 ^a 9 ^a 1 ^a 1 ^a	1 ^a 1 ^a	56 ^a 24 ^a 0 ^a 21 ^a	37 ^a 9 ^a 1 ^a 0 ^a	
31	53 ^a 69 ^a 0 ^a 27 ^a	72 ^a 1 ^a 2 ^a 9 ^a	2 ^a 9 ^a	43 ^a 58 ^a 0 ^a 17 ^a	42 ^a 0 ^a 1 ^a 5 ^a	1 ^a 5 ^a	56 ^a 45 ^a 0 ^a 18 ^a	38 ^a 9 ^a 0 ^a 7 ^a	
Apr. 10	53 ^a 96 ^a 0 ^a 22 ^a	75 ^a 0 ^a 2 ^a 9 ^a	2 ^a 9 ^a	43 ^a 75 ^a 0 ^a 13 ^a	43 ^a 5 ^a 1 ^a 8 ^a	1 ^a 8 ^a	56 ^a 63 ^a 0 ^a 15 ^a	39 ^a 6 ^a 0 ^a 6 ^a	
20	54 ^a 18 ^a 0 ^a 15 ^a	77 ^a 9 ^a 2 ^a 8 ^a	2 ^a 8 ^a	43 ^a 88 ^a 0 ^a 09 ^a	45 ^a 3 ^a 1 ^a 9 ^a	1 ^a 9 ^a	56 ^a 78 ^a 0 ^a 12 ^a	40 ^a 2 ^a 0 ^a 4 ^a	
30	54 ^a 33 ^a 0 ^a 10 ^a	80 ^a 7 ^a 2 ^a 8 ^a	2 ^a 8 ^a	43 ^a 97 ^a 0 ^a 06 ^a	47 ^a 2 ^a 2 ^a 0 ^a	2 ^a 0 ^a	56 ^a 90 ^a 0 ^a 10 ^a	40 ^a 6 ^a 0 ^a 3 ^a	
May 10	54 ^a 43 ^a 0 ^a 03 ^a	83 ^a 5 ^a 2 ^a 5 ^a	2 ^a 5 ^a	44 ^a 03 ^a 0 ^a 03 ^a	49 ^a 2 ^a 2 ^a 1 ^a	2 ^a 1 ^a	57 ^a 00 ^a 0 ^a 06 ^a	40 ^a 9 ^a 0 ^a 2 ^a	
20	54 ^a 46 ^a 0 ^a 03 ^a	86 ^a 0 ^a 2 ^a 4 ^a	2 ^a 4 ^a	44 ^a 06 ^a 0 ^a 00 ^a	51 ^a 3 ^a 1 ^a 9 ^a	1 ^a 9 ^a	57 ^a 06 ^a 0 ^a 04 ^a	41 ^a 1 ^a 0 ^a 1 ^a	
30	54 ^a 43 ^a 0 ^a 08 ^a	88 ^a 4 ^a 2 ^a 1 ^a	2 ^a 1 ^a	44 ^a 06 ^a 0 ^a 04 ^a	53 ^a 2 ^a 1 ^a 9 ^a	1 ^a 9 ^a	57 ^a 10 ^a 0 ^a 01 ^a	41 ^a 2 ^a 0 ^a 0 ^a	
June 9	54 ^a 35 ^a 0 ^a 14 ^a	90 ^a 5 ^a 1 ^a 8 ^a	1 ^a 8 ^a	44 ^a 02 ^a 0 ^a 06 ^a	55 ^a 1 ^a 1 ^a 6 ^a	1 ^a 6 ^a	57 ^a 11 ^a 0 ^a 02 ^a	41 ^a 2 ^a 0 ^a 1 ^a	
19	54 ^a 21 ^a 0 ^a 19 ^a	92 ^a 3 ^a 1 ^a 4 ^a	1 ^a 4 ^a	43 ^a 96 ^a 0 ^a 08 ^a	56 ^a 7 ^a 1 ^a 4 ^a	1 ^a 4 ^a	57 ^a 09 ^a 0 ^a 05 ^a	41 ^a 1 ^a 0 ^a 1 ^a	
29	54 ^a 02 ^a 0 ^a 24 ^a	93 ^a 7 ^a 1 ^a 1 ^a	1 ^a 1 ^a	43 ^a 88 ^a 0 ^a 11 ^a	58 ^a 1 ^a 1 ^a 2 ^a	1 ^a 2 ^a	57 ^a 04 ^a 0 ^a 07 ^a	40 ^a 9 ^a 0 ^a 3 ^a	
July 9	53 ^a 78 ^a 0 ^a 28 ^a	94 ^a 8 ^a 0 ^a 7 ^a	0 ^a 7 ^a	43 ^a 77 ^a 0 ^a 13 ^a	59 ^a 3 ^a 0 ^a 8 ^a	0 ^a 8 ^a	56 ^a 97 ^a 0 ^a 09 ^a	40 ^a 6 ^a 0 ^a 3 ^a	
19	53 ^a 50 ^a 0 ^a 30 ^a	95 ^a 5 ^a 0 ^a 2 ^a	0 ^a 2 ^a	43 ^a 64 ^a 0 ^a 15 ^a	60 ^a 1 ^a 0 ^a 5 ^a	0 ^a 5 ^a	56 ^a 88 ^a 0 ^a 11 ^a	40 ^a 3 ^a 0 ^a 4 ^a	
29	53 ^a 20 ^a 0 ^a 32 ^a	95 ^a 7 ^a 0 ^a 2 ^a	0 ^a 2 ^a	43 ^a 49 ^a 0 ^a 16 ^a	60 ^a 6 ^a 0 ^a 2 ^a	0 ^a 2 ^a	56 ^a 77 ^a 0 ^a 12 ^a	39 ^a 9 ^a 0 ^a 4 ^a	
Aug. 8	52 ^a 88 ^a 0 ^a 33 ^a	95 ^a 5 ^a 0 ^a 7 ^a	0 ^a 7 ^a	43 ^a 33 ^a 0 ^a 16 ^a	60 ^a 8 ^a 0 ^a 2 ^a	0 ^a 2 ^a	56 ^a 65 ^a 0 ^a 14 ^a	39 ^a 5 ^a 0 ^a 4 ^a	
18	52 ^a 55 ^a 0 ^a 32 ^a	94 ^a 8 ^a 1 ^a 1 ^a	1 ^a 1 ^a	43 ^a 17 ^a 0 ^a 16 ^a	60 ^a 6 ^a 0 ^a 5 ^a	0 ^a 5 ^a	56 ^a 51 ^a 0 ^a 13 ^a	39 ^a 1 ^a 0 ^a 5 ^a	
28	52 ^a 23 ^a 0 ^a 30 ^a	93 ^a 7 ^a 1 ^a 4 ^a	1 ^a 4 ^a	43 ^a 01 ^a 0 ^a 15 ^a	60 ^a 1 ^a 0 ^a 9 ^a	0 ^a 9 ^a	56 ^a 38 ^a 0 ^a 12 ^a	38 ^a 6 ^a 0 ^a 4 ^a	
Sept. 7	51 ^a 93 ^a 0 ^a 26 ^a	92 ^a 3 ^a 1 ^a 8 ^a	1 ^a 8 ^a	42 ^a 86 ^a 0 ^a 13 ^a	59 ^a 2 ^a 1 ^a 3 ^a	1 ^a 3 ^a	56 ^a 26 ^a 0 ^a 11 ^a	38 ^a 2 ^a 0 ^a 5 ^a	
17	51 ^a 67 ^a 0 ^a 20 ^a	90 ^a 5 ^a 2 ^a 0 ^a	2 ^a 0 ^a	42 ^a 73 ^a 0 ^a 11 ^a	57 ^a 9 ^a 1 ^a 6 ^a	1 ^a 6 ^a	56 ^a 15 ^a 0 ^a 09 ^a	37 ^a 7 ^a 0 ^a 3 ^a	
27	51 ^a 47 ^a 0 ^a 13 ^a	88 ^a 5 ^a 2 ^a 3 ^a	2 ^a 3 ^a	42 ^a 62 ^a 0 ^a 08 ^a	56 ^a 3 ^a 1 ^a 9 ^a	1 ^a 9 ^a	56 ^a 06 ^a 0 ^a 05 ^a	37 ^a 4 ^a 0 ^a 3 ^a	
Oct. 7	51 ^a 34 ^a 0 ^a 06 ^a	86 ^a 2 ^a 2 ^a 3 ^a	2 ^a 3 ^a	42 ^a 54 ^a 0 ^a 04 ^a	54 ^a 4 ^a 2 ^a 2 ^a	2 ^a 2 ^a	56 ^a 01 ^a 0 ^a 02 ^a	37 ^a 1 ^a 0 ^a 1 ^a	
17	51 ^a 28 ^a 0 ^a 03 ^a	83 ^a 9 ^a 2 ^a 3 ^a	2 ^a 3 ^a	42 ^a 50 ^a 0 ^a 01 ^a	52 ^a 2 ^a 2 ^a 5 ^a	2 ^a 5 ^a	55 ^a 99 ^a 0 ^a 03 ^a	37 ^a 0 ^a 0 ^a 1 ^a	
27	51 ^a 31 ^a 0 ^a 14 ^a	81 ^a 6 ^a 2 ^a 5 ^a	2 ^a 5 ^a	42 ^a 51 ^a 0 ^a 07 ^a	49 ^a 7 ^a 3 ^a 0 ^a	3 ^a 0 ^a	56 ^a 02 ^a 0 ^a 09 ^a	37 ^a 1 ^a 0 ^a 3 ^a	
Nov. 6	51 ^a 45 ^a 0 ^a 23 ^a	79 ^a 1 ^a 1 ^a 9 ^a	1 ^a 9 ^a	42 ^a 58 ^a 0 ^a 11 ^a	46 ^a 7 ^a 2 ^a 9 ^a	2 ^a 9 ^a	56 ^a 11 ^a 0 ^a 14 ^a	37 ^a 4 ^a 0 ^a 3 ^a	
16	51 ^a 68 ^a 0 ^a 32 ^a	77 ^a 2 ^a 1 ^a 7 ^a	1 ^a 7 ^a	42 ^a 69 ^a 0 ^a 17 ^a	43 ^a 8 ^a 3 ^a 0 ^a	3 ^a 0 ^a	56 ^a 25 ^a 0 ^a 19 ^a	37 ^a 9 ^a 0 ^a 3 ^a	
26	52 ^a 00 ^a 0 ^a 39 ^a	75 ^a 5 ^a 1 ^a 3 ^a	1 ^a 3 ^a	42 ^a 86 ^a 0 ^a 22 ^a	40 ^a 8 ^a 3 ^a 1 ^a	3 ^a 1 ^a	56 ^a 44 ^a 0 ^a 23 ^a	38 ^a 7 ^a 1 ^a 0 ^a	
Dec. 6	52 ^a 39 ^a 0 ^a 46 ^a	74 ^a 2 ^a 0 ^a 9 ^a	0 ^a 9 ^a	43 ^a 08 ^a 0 ^a 26 ^a	37 ^a 7 ^a 3 ^a 0 ^a	3 ^a 0 ^a	56 ^a 67 ^a 0 ^a 27 ^a	39 ^a 7 ^a 1 ^a 1 ^a	
16	52 ^a 85 ^a 0 ^a 52 ^a	73 ^a 3 ^a 0 ^a 4 ^a	0 ^a 4 ^a	43 ^a 34 ^a 0 ^a 29 ^a	34 ^a 7 ^a 2 ^a 9 ^a	2 ^a 9 ^a	56 ^a 94 ^a 0 ^a 31 ^a	41 ^a 0 ^a 1 ^a 4 ^a	
26	53 ^a 37 ^a 0 ^a 56 ^a	72 ^a 9 ^a 0 ^a 1 ^a	0 ^a 1 ^a	43 ^a 63 ^a 0 ^a 33 ^a	31 ^a 8 ^a 2 ^a 6 ^a	2 ^a 6 ^a	57 ^a 25 ^a 0 ^a 33 ^a	42 ^a 4 ^a 1 ^a 6 ^a	
36	53 ^a 93 ^a	73 ^a 0 ^a		43 ^a 96 ^a	29 ^a 2 ^a		57 ^a 58 ^a	44 ^a 0 ^a	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β Chamæleontis.		α ¹ Crucis.		β Corvi.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. South.
	h m	° '	h m	° '	h m	° '
	12 9	78 30	12 18	62 17	12 26	22 35
Jan. 1	57 ^a .30 ^a	23 ^a .2 ^a	35 ^a .88 ^a	39 ^a .3 ^a	49 ^a .08 ^a	51 ^a .5 ^a
11	58 ^a .46 ^a	25 ^a .0 ^a	36 ^a .45 ^a	41 ^a .4 ^a	49 ^a .43 ^a	53 ^a .7 ^a
21	59 ^a .53 ^a	27 ^a .4 ^a	36 ^a .99 ^a	43 ^a .9 ^a	49 ^a .76 ^a	56 ^a .1 ^a
31	60 ^a .49 ^a	30 ^a .2 ^a	37 ^a .47 ^a	46 ^a .8 ^a	50 ^a .06 ^a	58 ^a .6 ^a
	0 ^a .82	3 ^a .3	0 ^a .42	3 ^a .2	0 ^a .27	2 ^a .4
Feb. 10	61 ^a .31 ^a	33 ^a .5 ^a	37 ^a .89 ^a	50 ^a .0 ^a	50 ^a .33 ^a	61 ^a .0 ^a
20	61 ^a .98 ^a	37 ^a .1 ^a	38 ^a .25 ^a	53 ^a .4 ^a	50 ^a .57 ^a	63 ^a .3 ^a
Mar. 1	62 ^a .49 ^a	40 ^a .8 ^a	38 ^a .53 ^a	57 ^a .0 ^a	50 ^a .76 ^a	65 ^a .5 ^a
11	62 ^a .83 ^a	44 ^a .7 ^a	38 ^a .73 ^a	60 ^a .6 ^a	50 ^a .91 ^a	67 ^a .6 ^a
	0 ^a .16	3 ^a .9	0 ^a .13	3 ^a .6	0 ^a .11	1 ^a .9
21	62 ^a .99 ^a	48 ^a .6 ^a	38 ^a .86 ^a	64 ^a .2 ^a	51 ^a .02 ^a	69 ^a .5 ^a
31	63 ^a .00 ^a	52 ^a .4 ^a	38 ^a .92 ^a	67 ^a .6 ^a	51 ^a .09 ^a	71 ^a .1 ^a
Apr. 10	62 ^a .84 ^a	56 ^a .1 ^a	38 ^a .92 ^a	70 ^a .9 ^a	51 ^a .13 ^a	72 ^a .5 ^a
20	62 ^a .54 ^a	59 ^a .6 ^a	38 ^a .85 ^a	74 ^a .0 ^a	51 ^a .13 ^a	73 ^a .7 ^a
	0 ^a .44	3 ^a .2	0 ^a .13	2 ^a .7	0 ^a .02	0 ^a .9
30	62 ^a .10 ^a	62 ^a .8 ^a	38 ^a .72 ^a	76 ^a .7 ^a	51 ^a .11 ^a	74 ^a .6 ^a
May 10	61 ^a .53 ^a	65 ^a .6 ^a	38 ^a .55 ^a	79 ^a .1 ^a	51 ^a .07 ^a	75 ^a .3 ^a
20	60 ^a .85 ^a	68 ^a .1 ^a	38 ^a .33 ^a	81 ^a .2 ^a	51 ^a .01 ^a	75 ^a .8 ^a
30	60 ^a .08 ^a	70 ^a .1 ^a	38 ^a .07 ^a	82 ^a .8 ^a	50 ^a .94 ^a	76 ^a .1 ^a
	0 ^a .84	1 ^a .5	0 ^a .29	1 ^a .2	0 ^a .09	0 ^a .0
June 9	59 ^a .24 ^a	71 ^a .6 ^a	37 ^a .78 ^a	84 ^a .0 ^a	50 ^a .85 ^a	76 ^a .1 ^a
19	58 ^a .34 ^a	72 ^a .6 ^a	37 ^a .47 ^a	84 ^a .7 ^a	50 ^a .75 ^a	75 ^a .9 ^a
29	57 ^a .41 ^a	73 ^a .1 ^a	37 ^a .14 ^a	84 ^a .9 ^a	50 ^a .64 ^a	75 ^a .5 ^a
July 9	56 ^a .47 ^a	73 ^a .0 ^a	36 ^a .81 ^a	84 ^a .6 ^a	50 ^a .54 ^a	74 ^a .9 ^a
	0 ^a .91	0 ^a .7	0 ^a .33	0 ^a .8	0 ^a .11	0 ^a .8
19	55 ^a .56 ^a	72 ^a .3 ^a	36 ^a .48 ^a	83 ^a .8 ^a	50 ^a .43 ^a	74 ^a .1 ^a
29	54 ^a .70 ^a	71 ^a .1 ^a	36 ^a .17 ^a	82 ^a .6 ^a	50 ^a .32 ^a	73 ^a .2 ^a
Aug. 8	53 ^a .92 ^a	69 ^a .5 ^a	35 ^a .89 ^a	80 ^a .9 ^a	50 ^a .23 ^a	72 ^a .1 ^a
18	53 ^a .25 ^a	67 ^a .4 ^a	35 ^a .64 ^a	78 ^a .9 ^a	50 ^a .15 ^a	71 ^a .0 ^a
	0 ^a .54	2 ^a .5	0 ^a .20	2 ^a .3	0 ^a .06	1 ^a .1
28	52 ^a .71 ^a	64 ^a .9 ^a	35 ^a .44 ^a	76 ^a .6 ^a	50 ^a .09 ^a	69 ^a .9 ^a
Sept. 7	52 ^a .33 ^a	62 ^a .2 ^a	35 ^a .31 ^a	74 ^a .1 ^a	50 ^a .05 ^a	68 ^a .8 ^a
17	52 ^a .14 ^a	59 ^a .3 ^a	35 ^a .25 ^a	71 ^a .5 ^a	50 ^a .05 ^a	67 ^a .7 ^a
27	52 ^a .16 ^a	56 ^a .0 ^a	{35 ^a .28 ^a } {35 ^a .29 ^a }	{68 ^a .8 ^a } {68 ^a .8 ^a }	50 ^a .09 ^a	66 ^a .8 ^a
	0 ^a .23	2 ^a .9	0 ^a .12	2 ^a .5	0 ^a .09	0 ^a .8
Oct. 7	52 ^a .39 ^a	53 ^a .1 ^a	35 ^a .41 ^a	66 ^a .1 ^a	50 ^a .18 ^a	66 ^a .0 ^a
17	52 ^a .83 ^a	50 ^a .4 ^a	35 ^a .62 ^a	63 ^a .8 ^a	50 ^a .31 ^a	65 ^a .7 ^a
27	53 ^a .47 ^a	48 ^a .0 ^a	35 ^a .92 ^a	61 ^a .8 ^a	50 ^a .49 ^a	65 ^a .6 ^a
Nov. 6	54 ^a .28 ^a	46 ^a .0 ^a	36 ^a .30 ^a	60 ^a .2 ^a	50 ^a .71 ^a	65 ^a .9 ^a
	0 ^a .97	1 ^a .5	0 ^a .46	1 ^a .1	0 ^a .26	0 ^a .6
16	55 ^a .25 ^a	44 ^a .5 ^a	36 ^a .76 ^a	59 ^a .1 ^a	50 ^a .97 ^a	66 ^a .5 ^a
26	56 ^a .35 ^a	43 ^a .5 ^a	37 ^a .28 ^a	58 ^a .6 ^a	51 ^a .28 ^a	67 ^a .5 ^a
Dec. 6	57 ^a .53 ^a	43 ^a .2 ^a	37 ^a .85 ^a	58 ^a .7 ^a	51 ^a .61 ^a	68 ^a .9 ^a
16	58 ^a .76 ^a	43 ^a .6 ^a	38 ^a .44 ^a	59 ^a .3 ^a	51 ^a .96 ^a	70 ^a .6 ^a
	1 ^a .23	0 ^a .9	0 ^a .60	1 ^a .3	0 ^a .36	2 ^a .0
26	59 ^a .99 ^a	44 ^a .5 ^a	39 ^a .04 ^a	60 ^a .6 ^a	52 ^a .32 ^a	72 ^a .6 ^a
36	61 ^a .21 ^a	46 ^a .1 ^a	39 ^a .64 ^a	62 ^a .4 ^a	52 ^a .68 ^a	74 ^a .7 ^a

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.						
Day of the Month.	12 Canum Venaticorum.		α Virginis. (Spica)		γ Ursae Majoris.	
	R. A.	Dec. North.	R. A.	Dec. South.	R. A.	Dec. North.
	h m	° '	h m	° '	h m	° '
	12 49	39 5	13 17	10 24	13 41	50 1
Jan. 1	16 ^s .93 ^s 0 ^s .40	36 ^s .5 ^s 1 ^s .7	35 ^s .84 ^s 0 ^s .35	27 ^s .7 ^s 2 ^s .1	51 ^s .31 ^s 0 ^s .44	43 ^s .6 ^s 2 ^s .0
11	17 ^s .33 ^s 0 ^s .39	34 ^s .8 ^s 1 ^s .2	36 ^s .19 ^s 0 ^s .33	29 ^s .8 ^s 2 ^s .1	51 ^s .75 ^s 0 ^s .45	41 ^s .6 ^s 1 ^s .5
21	17 ^s .72 ^s 0 ^s .37	33 ^s .6 ^s 0 ^s .6	36 ^s .52 ^s 0 ^s .32	31 ^s .9 ^s 2 ^s .0	52 ^s .20 ^s 0 ^s .44	40 ^s .1 ^s 0 ^s .9
31	18 ^s .09 ^s 0 ^s .33	33 ^s .0 ^s 0 ^s .1	36 ^s .84 ^s 0 ^s .29	33 ^s .9 ^s 1 ^s .9	52 ^s .64 ^s 0 ^s .41	39 ^s .2 ^s 0 ^s .3
Feb. 10	18 ^s .42 ^s 0 ^s .29	32 ^s .9 ^s 0 ^s .5	37 ^s .13 ^s 0 ^s .27	35 ^s .8 ^s 1 ^s .8	53 ^s .05 ^s 0 ^s .38	39 ^s .0 ^s 0 ^s .4
20	18 ^s .71 ^s 0 ^s .25	33 ^s .4 ^s 0 ^s .9	37 ^s .40 ^s 0 ^s .23	37 ^s .6 ^s 1 ^s .5	53 ^s .43 ^s 0 ^s .34	39 ^s .4 ^s 1 ^s .0
Mar. 1	18 ^s .96 ^s 0 ^s .20	34 ^s .3 ^s 1 ^s .3	37 ^s .63 ^s 0 ^s .19	39 ^s .1 ^s 1 ^s .3	53 ^s .77 ^s 0 ^s .29	40 ^s .4 ^s 1 ^s .5
11	19 ^s .16 ^s 0 ^s .14	35 ^s .6 ^s 1 ^s .6	37 ^s .82 ^s 0 ^s .16	40 ^s .4 ^s 1 ^s .1	54 ^s .06 ^s 0 ^s .23	41 ^s .9 ^s 1 ^s .9
21	19 ^s .30 ^s 0 ^s .09	37 ^s .2 ^s 1 ^s .9	37 ^s .98 ^s 0 ^s .13	41 ^s .5 ^s 0 ^s .9	54 ^s .29 ^s 0 ^s .17	43 ^s .8 ^s 2 ^s .2
31	19 ^s .39 ^s 0 ^s .05	39 ^s .1 ^s 2 ^s .1	38 ^s .11 ^s 0 ^s .09	42 ^s .4 ^s 0 ^s .7	54 ^s .46 ^s 0 ^s .11	46 ^s .0 ^s 2 ^s .5
Apr. 10	19 ^s .44 ^s 0 ^s .00	41 ^s .2 ^s 2 ^s .1	38 ^s .20 ^s 0 ^s .06	43 ^s .1 ^s 0 ^s .4	54 ^s .57 ^s 0 ^s .06	48 ^s .5 ^s 3 ^s .6
20	19 ^s .44 ^s 0 ^s .03	43 ^s .3 ^s 2 ^s .1	38 ^s .26 ^s 0 ^s .03	43 ^s .5 ^s 0 ^s .3	54 ^s .63 ^s 0 ^s .01	51 ^s .1 ^s 3 ^s .6
30	19 ^s .41 ^s 0 ^s .06	45 ^s .4 ^s 1 ^s .9	38 ^s .29 ^s 0 ^s .01	43 ^s .8 ^s 0 ^s .1	54 ^s .64 ^s 0 ^s .04	53 ^s .7 ^s 3 ^s .6
May 10	19 ^s .35 ^s 0 ^s .10	47 ^s .3 ^s 1 ^s .8	38 ^s .30 ^s 0 ^s .01	43 ^s .9 ^s 0 ^s .0	54 ^s .60 ^s 0 ^s .09	56 ^s .3 ^s 3 ^s .4
20	19 ^s .25 ^s 0 ^s .12	49 ^s .1 ^s 1 ^s .6	38 ^s .29 ^s 0 ^s .04	43 ^s .9 ^s 0 ^s .2	54 ^s .51 ^s 0 ^s .12	58 ^s .7 ^s 3 ^s .1
30	19 ^s .13 ^s 0 ^s .13	50 ^s .7 ^s 1 ^s .3	38 ^s .25 ^s 0 ^s .05	43 ^s .7 ^s 0 ^s .2	54 ^s .39 ^s 0 ^s .16	60 ^s .8 ^s 1 ^s .8
June 9	19 ^s .00 ^s 0 ^s .14	52 ^s .0 ^s 0 ^s .9	38 ^s .20 ^s 0 ^s .07	43 ^s .5 ^s 0 ^s .4	54 ^s .23 ^s 0 ^s .18	62 ^s .6 ^s 1 ^s .4
19	18 ^s .86 ^s 0 ^s .16	52 ^s .9 ^s 0 ^s .6	38 ^s .13 ^s 0 ^s .08	43 ^s .1 ^s 0 ^s .4	54 ^s .05 ^s 0 ^s .20	64 ^s .0 ^s 1 ^s .0
29	18 ^s .70 ^s 0 ^s .15	53 ^s .5 ^s 0 ^s .2	38 ^s .05 ^s 0 ^s .10	42 ^s .7 ^s 0 ^s .5	53 ^s .85 ^s 0 ^s .22	65 ^s .0 ^s 0 ^s .6
July 9	18 ^s .55 ^s 0 ^s .15	53 ^s .7 ^s 0 ^s .2	37 ^s .95 ^s 0 ^s .10	42 ^s .2 ^s 0 ^s .5	53 ^s .63 ^s 0 ^s .23	65 ^s .6 ^s 0 ^s .3
19	18 ^s .40 ^s 0 ^s .15	53 ^s .5 ^s 0 ^s .5	37 ^s .85 ^s 0 ^s .10	41 ^s .7 ^s 0 ^s .6	53 ^s .40 ^s 0 ^s .24	65 ^s .8 ^s 0 ^s .3
29	18 ^s .25 ^s 0 ^s .14	53 ^s .0 ^s 1 ^s .0	37 ^s .75 ^s 0 ^s .11	41 ^s .1 ^s 0 ^s .6	53 ^s .16 ^s 0 ^s .23	65 ^s .5 ^s 0 ^s .8
Aug. 8	18 ^s .11 ^s 0 ^s .13	52 ^s .0 ^s 1 ^s .3	37 ^s .64 ^s 0 ^s .10	40 ^s .5 ^s 0 ^s .5	52 ^s .93 ^s 0 ^s .22	64 ^s .7 ^s 1 ^s .3
18	17 ^s .98 ^s 0 ^s .10	50 ^s .7 ^s 1 ^s .6	37 ^s .54 ^s 0 ^s .08	40 ^s .0 ^s 0 ^s .6	52 ^s .71 ^s 0 ^s .20	63 ^s .4 ^s 1 ^s .6
28	17 ^s .88 ^s 0 ^s .07	49 ^s .1 ^s 2 ^s .0	37 ^s .46 ^s 0 ^s .07	39 ^s .4 ^s 0 ^s .4	52 ^s .51 ^s 0 ^s .18	61 ^s .8 ^s 2 ^s .1
Sept. 7	17 ^s .81 ^s 0 ^s .04	47 ^s .1 ^s 2 ^s .3	37 ^s .39 ^s 0 ^s .04	39 ^s .0 ^s 0 ^s .4	52 ^s .33 ^s 0 ^s .15	59 ^s .7 ^s 2 ^s .5
17	17 ^s .77 ^s 0 ^s .01	44 ^s .8 ^s 2 ^s .6	37 ^s .35 ^s 0 ^s .01	38 ^s .6 ^s 0 ^s .2	52 ^s .18 ^s 0 ^s .10	57 ^s .2 ^s 2 ^s .8
27	17 ^s .76 ^s 0 ^s .05	42 ^s .2 ^s 3 ^s .1	37 ^s .34 ^s 0 ^s .02	38 ^s .4 ^s 0 ^s .1	52 ^s .08 ^s 0 ^s .05	54 ^s .4 ^s 3 ^s .1
Oct. 7	17 ^s .81 ^s 0 ^s .10	39 ^s .1 ^s 3 ^s .0	37 ^s .36 ^s 0 ^s .08	38 ^s .5 ^s 0 ^s .3	52 ^s .03 ^s 0 ^s .00	51 ^s .3 ^s 3 ^s .3
17	17 ^s .91 ^s 0 ^s .14	36 ^s .1 ^s 3 ^s .1	37 ^s .44 ^s 0 ^s .12	38 ^s .8 ^s 0 ^s .5	52 ^s .03 ^s 0 ^s .07	48 ^s .0 ^s 3 ^s .9
27	18 ^s .05 ^s 0 ^s .20	33 ^s .0 ^s 3 ^s .2	37 ^s .56 ^s 0 ^s .17	39 ^s .3 ^s 0 ^s .8	52 ^s .10 ^s 0 ^s .13	44 ^s .1 ^s 3 ^s .6
Nov. 6	18 ^s .25 ^s 0 ^s .25	29 ^s .8 ^s 3 ^s .2	37 ^s .73 ^s 0 ^s .21	40 ^s .1 ^s 1 ^s .1	52 ^s .23 ^s 0 ^s .20	40 ^s .5 ^s 3 ^s .6
16	18 ^s .50 ^s 0 ^s .30	26 ^s .6 ^s 3 ^s .1	37 ^s .94 ^s 0 ^s .25	41 ^s .2 ^s 1 ^s .3	52 ^s .43 ^s 0 ^s .26	36 ^s .9 ^s 3 ^s .6
26	18 ^s .80 ^s 0 ^s .34	23 ^s .5 ^s 2 ^s .9	38 ^s .19 ^s 0 ^s .29	42 ^s .5 ^s 1 ^s .6	52 ^s .69 ^s 0 ^s .32	33 ^s .3 ^s 3 ^s .3
Dec. 6	19 ^s .14 ^s 0 ^s .37	20 ^s .6 ^s 2 ^s .7	38 ^s .48 ^s 0 ^s .32	44 ^s .1 ^s 1 ^s .8	53 ^s .01 ^s 0 ^s .37	30 ^s .0 ^s 3 ^s .3
16	19 ^s .51 ^s 0 ^s .39	17 ^s .9 ^s 2 ^s .3	38 ^s .80 ^s 0 ^s .34	45 ^s .9 ^s 2 ^s .0	53 ^s .38 ^s 0 ^s .41	26 ^s .9 ^s 3 ^s .1
	0 ^s .40	15 ^s .6 ^s 1 ^s .9	39 ^s .14 ^s 0 ^s .34	47 ^s .9 ^s 2 ^s .1	53 ^s .79 ^s 0 ^s .43	24 ^s .2 ^s 2 ^s .7
		13 ^s .7 ^s 1 ^s .9	39 ^s .48 ^s 0 ^s .34	50 ^s .0 ^s 2 ^s .1	54 ^s .22 ^s 0 ^s .43	21 ^s .9 ^s 2 ^s .3

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

h.	♃ Ophiuchi.		♏ Scorp.ii. (Antares)		♁ Draconis.	
	R. A.	Dec. South.	R. A.	Dec. South.	R. A.	Dec. North.
	h m	° ′	h m	° ′	h m	° ′
	16 6	3 19	16 20	26 6	16 22	61 49
1	46 ^s .53 ^s	18 ^h .6 ^m	33 ^s .13 ^s	31 ^h .4 ^m	1 ^s .24 ^s	71 ^h .6 ^m
11	46 ^s .80 ^s	20 ^h .3 ^m	33 ^s .43 ^s	32 ^h .0 ^m	1 ^s .59 ^s	68 ^h .3 ^m
21	47 ^s .10 ^s	22 ^h .0 ^m	33 ^s .76 ^s	32 ^h .8 ^m	2 ^s .01 ^s	65 ^h .5 ^m
31	47 ^s .41 ^s	23 ^h .6 ^m	34 ^s .10 ^s	33 ^h .6 ^m	2 ^s .48 ^s	63 ^h .1 ^m
10	47 ^s .73 ^s	25 ^h .0 ^m	34 ^s .46 ^s	34 ^h .5 ^m	2 ^s .99 ^s	61 ^h .3 ^m
20	48 ^s .05 ^s	26 ^h .2 ^m	34 ^s .81 ^s	35 ^h .5 ^m	3 ^s .51 ^s	60 ^h .2 ^m
1	48 ^s .36 ^s	27 ^h .2 ^m	35 ^s .16 ^s	36 ^h .4 ^m	4 ^s .04 ^s	59 ^h .8 ^m
11	48 ^s .66 ^s	27 ^h .9 ^m	35 ^s .49 ^s	37 ^h .4 ^m	4 ^s .55 ^s	60 ^h .0 ^m
21	48 ^s .94 ^s	28 ^h .3 ^m	35 ^s .81 ^s	38 ^h .2 ^m	5 ^s .03 ^s	60 ^h .9 ^m
31	49 ^s .20 ^s	28 ^h .5 ^m	36 ^s .12 ^s	39 ^h .1 ^m	5 ^s .47 ^s	62 ^h .3 ^m
10	49 ^s .44 ^s	28 ^h .4 ^m	36 ^s .40 ^s	39 ^h .8 ^m	5 ^s .87 ^s	64 ^h .3 ^m
20	49 ^s .65 ^s	28 ^h .0 ^m	36 ^s .66 ^s	40 ^h .5 ^m	6 ^s .20 ^s	66 ^h .8 ^m
30	49 ^s .84 ^s	27 ^h .6 ^m	36 ^s .89 ^s	41 ^h .2 ^m	6 ^s .47 ^s	69 ^h .6 ^m
10	50 ^s .01 ^s	27 ^h .0 ^m	37 ^s .10 ^s	41 ^h .7 ^m	6 ^s .66 ^s	72 ^h .6 ^m
20	50 ^s .15 ^s	26 ^h .2 ^m	37 ^s .27 ^s	42 ^h .3 ^m	6 ^s .78 ^s	75 ^h .8 ^m
30	50 ^s .26 ^s	25 ^h .4 ^m	37 ^s .41 ^s	42 ^h .8 ^m	6 ^s .82 ^s	79 ^h .0 ^m
9	50 ^s .33 ^s	24 ^h .6 ^m	37 ^s .52 ^s	43 ^h .2 ^m	6 ^s .79 ^s	82 ^h .1 ^m
19	50 ^s .38 ^s	23 ^h .8 ^m	37 ^s .58 ^s	43 ^h .6 ^m	6 ^s .69 ^s	85 ^h .0 ^m
29	50 ^s .39 ^s	23 ^h .0 ^m	37 ^s .61 ^s	44 ^h .0 ^m	6 ^s .51 ^s	87 ^h .7 ^m
9	50 ^s .36 ^s	22 ^h .3 ^m	37 ^s .61 ^s	44 ^h .3 ^m	6 ^s .28 ^s	90 ^h .1 ^m
19	50 ^s .31 ^s	21 ^h .6 ^m	37 ^s .56 ^s	44 ^h .6 ^m	5 ^s .98 ^s	92 ^h .0 ^m
29	50 ^s .23 ^s	21 ^h .0 ^m	37 ^s .48 ^s	44 ^h .7 ^m	5 ^s .63 ^s	93 ^h .6 ^m
8	50 ^s .12 ^s	20 ^h .6 ^m	37 ^s .36 ^s	44 ^h .8 ^m	5 ^s .24 ^s	94 ^h .7 ^m
18	49 ^s .99 ^s	20 ^h .2 ^m	37 ^s .23 ^s	44 ^h .7 ^m	4 ^s .82 ^s	95 ^h .3 ^m
28	49 ^s .84 ^s	19 ^h .9 ^m	37 ^s .07 ^s	44 ^h .6 ^m	4 ^s .37 ^s	95 ^h .3 ^m
7	49 ^s .69 ^s	19 ^h .8 ^m	36 ^s .90 ^s	44 ^h .3 ^m	3 ^s .92 ^s	94 ^h .9 ^m
17	49 ^s .55 ^s	19 ^h .8 ^m	36 ^s .74 ^s	43 ^h .9 ^m	3 ^s .47 ^s	93 ^h .9 ^m
27	49 ^s .41 ^s	19 ^h .9 ^m	36 ^s .58 ^s	43 ^h .5 ^m	3 ^s .05 ^s	92 ^h .5 ^m
7	49 ^s .29 ^s	20 ^h .2 ^m	36 ^s .45 ^s	43 ^h .0 ^m	2 ^s .65 ^s	90 ^h .5 ^m
17	49 ^s .21 ^s	20 ^h .7 ^m	36 ^s .34 ^s	42 ^h .5 ^m	2 ^s .30 ^s	88 ^h .1 ^m
27	49 ^s .16 ^s	21 ^h .3 ^m	36 ^s .28 ^s	42 ^h .0 ^m	2 ^s .01 ^s	85 ^h .3 ^m
6	49 ^s .15 ^s	22 ^h .1 ^m	36 ^s .27 ^s	41 ^h .6 ^m	1 ^s .79 ^s	82 ^h .1 ^m
16	49 ^s .19 ^s	23 ^h .2 ^m	36 ^s .31 ^s	41 ^h .2 ^m	1 ^s .66 ^s	78 ^h .7 ^m
26	49 ^s .30 ^s	24 ^h .6 ^m	36 ^s .40 ^s	41 ^h .0 ^m	1 ^s .61 ^s	75 ^h .0 ^m
6	49 ^s .44 ^s	26 ^h .0 ^m	36 ^s .37 ^s	41 ^h .0 ^m	1 ^s .66 ^s	70 ^h .9 ^m
16	49 ^s .63 ^s	27 ^h .3 ^m	36 ^s .77 ^s	41 ^h .1 ^m	1 ^s .11 ^s	67 ^h .1 ^m
26	49 ^s .86 ^s	28 ^h .1 ^m	37 ^s .02 ^s	41 ^h .4 ^m	2 ^s .24 ^s	63 ^h .4 ^m
36	50 ^s .13 ^s	29 ^h .0 ^m	37 ^s .32 ^s	41 ^h .9 ^m	2 ^s .36 ^s	60 ^h .0 ^m

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Centauri.			ι Bootis.			α Libra.		
	R. A.	Dec. South.		R. A.	Dec. North.		R. A.	Dec. South.	
	h m	° ' "	° ' "	h m	° ' "	° ' "	h m	° ' "	° ' "
	14 29	60 13		14 38	27 40		14 42	15 26	
Jan. 1	49° 25' 58"	55° 5' 0"	40° 87' 58"	48° 2' 55"	53° 78' 33"	25° 7' 16"			
11	49° 82' 05"	55° 9' 08"	41° 21' 34"	45° 7' 21"	54° 11' 34"	27° 3' 17"			
21	50° 40' 57"	56° 7' 13"	41° 55' 35"	43° 6' 17"	54° 45' 34"	29° 0' 18"			
31	50° 97' 55"	58° 0' 17"	41° 90' 34"	41° 9' 12"	54° 79' 33"	30° 8' 17"			
Feb. 10	51° 52' 52"	59° 7' 20"	42° 24' 33"	40° 7' 07"	55° 12' 32"	32° 5' 15"			
20	52° 04' 49"	61° 7' 23"	42° 57' 30"	40° 0' 02"	55° 44' 29"	34° 0' 15"			
Mar. 1	52° 53' 44"	64° 0' 26"	42° 87' 27"	39° 8' 03"	55° 73' 27"	35° 5' 13"			
11	52° 97' 39"	66° 6' 27"	43° 14' 24"	40° 1' 08"	56° 00' 24"	36° 8' 11"			
21	53° 36' 33"	69° 3' 28"	43° 38' 20"	40° 9' 11"	56° 24' 21"	37° 9' 10"			
31	53° 69' 27"	72° 1' 29"	43° 58' 17"	42° 0' 15"	56° 45' 18"	38° 9' 07"			
Apr. 10	53° 96' 22"	75° 0' 29"	43° 75' 13"	43° 5' 18"	56° 63' 15"	39° 6' 06"			
20	54° 18' 15"	77° 9' 28"	43° 88' 09"	45° 3' 19"	56° 78' 12"	40° 2' 04"			
30	54° 33' 10"	80° 7' 28"	43° 97' 06"	47° 2' 20"	56° 90' 10"	40° 6' 03"			
May 10	54° 43' 03"	83° 5' 25"	44° 03' 03"	49° 2' 21"	57° 00' 06"	40° 9' 02"			
20	54° 46' 03"	86° 0' 24"	44° 06' 00"	51° 3' 19"	57° 06' 04"	41° 1' 01"			
30	54° 43' 08"	88° 4' 21"	44° 06' 04"	53° 2' 19"	57° 10' 01"	41° 2' 00"			
June 9	54° 35' 14"	90° 5' 18"	44° 02' 06"	55° 1' 16"	57° 11' 02"	41° 2' 01"			
19	54° 21' 19"	92° 3' 14"	43° 96' 08"	56° 7' 14"	57° 09' 05"	41° 1' 02"			
29	54° 02' 24"	93° 7' 11"	43° 88' 11"	58° 1' 12"	57° 04' 07"	40° 9' 03"			
July 9	53° 78' 28"	94° 8' 07"	43° 77' 13"	59° 3' 08"	56° 97' 09"	40° 6' 03"			
19	53° 50' 30"	95° 5' 02"	43° 64' 15"	60° 1' 05"	56° 88' 11"	40° 3' 04"			
29	53° 20' 32"	95° 7' 02"	43° 49' 16"	60° 6' 02"	56° 77' 12"	39° 9' 04"			
Aug. 8	52° 88' 33"	95° 5' 07"	43° 33' 16"	60° 8' 02"	56° 65' 14"	39° 5' 04"			
18	52° 55' 32"	94° 8' 11"	43° 17' 16"	60° 6' 05"	56° 51' 13"	39° 1' 05"			
28	52° 23' 30"	93° 7' 14"	43° 01' 15"	60° 1' 09"	56° 38' 12"	38° 6' 04"			
Sept. 7	51° 93' 26"	92° 3' 18"	42° 86' 13"	59° 2' 13"	56° 26' 11"	38° 2' 05"			
17	51° 67' 20"	90° 5' 20"	42° 73' 11"	57° 9' 16"	56° 15' 09"	37° 7' 03"			
27	51° 47' 13"	88° 5' 23"	42° 62' 08"	56° 3' 19"	56° 06' 05"	37° 4' 03"			
Oct. 7	51° 34' 06"	86° 2' 23"	42° 54' 04"	54° 4' 22"	56° 01' 02"	37° 1' 01"			
17	51° 28' 03"	83° 9' 23"	42° 50' 01"	52° 2' 25"	55° 99' 03"	37° 0' 01"			
27	51° 31' 14"	81° 6' 25"	42° 51' 07"	49° 7' 30"	56° 02' 09"	37° 1' 03"			
Nov. 6	51° 45' 23"	79° 1' 19"	42° 58' 11"	46° 7' 29"	56° 11' 14"	37° 4' 05"			
16	51° 68' 32"	77° 2' 17"	42° 69' 17"	43° 8' 30"	56° 25' 19"	37° 9' 08"			
26	52° 00' 39"	75° 5' 13"	42° 86' 22"	40° 8' 31"	56° 44' 23"	38° 7' 10"			
Dec. 6	52° 39' 46"	74° 2' 09"	43° 08' 26"	37° 7' 30"	56° 67' 27"	39° 7' 13"			
16	52° 85' 52"	73° 3' 04"	43° 34' 29"	34° 7' 29"	56° 94' 31"	41° 0' 14"			
26	53° 37' 56"	72° 9' 01"	43° 63' 33"	31° 8' 26"	57° 25' 33"	42° 4' 16"			
6	53° 93' 58"	73° 0' 01"	43° 96' 33"	29° 2' 26"	57° 58' 33"	44° 0' 16"			

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Herculis.		β Draconis.		α Ophiuchi.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	h m	° '	h m	° '	h m	° '
	17 8	14 33	17 27	52 24	17 28	12 39
Jan. 1	3 ^s .20 ^s 0 ^m .22	18 ^s .1 ^s 2 ^m .5	8 ^s .57 ^s 0 ^m .21	21 ^s .5 ^s 3 ^m .5	13 ^s .27 ^s 0 ^m .20	55 ^s .8 ^s 2 ^m .3
11	3 ^s .42 ^s 0 ^m .25	15 ^s .6 ^s 2 ^m .2	8 ^s .78 ^s 0 ^m .27	18 ^s .0 ^s 3 ^m .2	13 ^s .47 ^s 0 ^m .24	53 ^s .5 ^s 2 ^m .1
21	3 ^s .67 ^s 0 ^m .28	13 ^s .4 ^s 2 ^m .0	9 ^s .05 ^s 0 ^m .32	14 ^s .8 ^s 2 ^m .9	13 ^s .71 ^s 0 ^m .26	51 ^s .4 ^s 1 ^m .9
31	3 ^s .95 ^s 0 ^m .29	11 ^s .4 ^s 1 ^m .7	9 ^s .37 ^s 0 ^m .36	11 ^s .9 ^s 2 ^m .4	13 ^s .97 ^s 0 ^m .28	49 ^s .5 ^s 1 ^m .7
Feb. 10	4 ^s .24 ^s 0 ^m .31	9 ^s .7 ^s 1 ^m .4	9 ^s .73 ^s 0 ^m .39	9 ^s .5 ^s 1 ^m .8	14 ^s .25 ^s 0 ^m .30	47 ^s .8 ^s 1 ^m .4
20	4 ^s .55 ^s 0 ^m .30	8 ^s .3 ^s 0 ^m .9	10 ^s .12 ^s 0 ^m .41	7 ^s .7 ^s 1 ^m .2	14 ^s .55 ^s 0 ^m .30	46 ^s .4 ^s 0 ^m .9
Mar. 1	4 ^s .85 ^s 0 ^m .31	7 ^s .4 ^s 0 ^m .5	10 ^s .53 ^s 0 ^m .42	6 ^s .5 ^s 0 ^m .6	14 ^s .85 ^s 0 ^m .30	45 ^s .8 ^s 0 ^m .6
11	5 ^s .16 ^s 0 ^m .29	6 ^s .9 ^s 0 ^m .1	10 ^s .95 ^s 0 ^m .41	5 ^s .9 ^s 0 ^m .1	15 ^s .15 ^s 0 ^m .30	44 ^s .9 ^s 0 ^m .1
21	5 ^s .45 ^s 0 ^m .29	6 ^s .8 ^s 0 ^m .4	11 ^s .36 ^s 0 ^m .40	6 ^s .0 ^s 0 ^m .7	15 ^s .45 ^s 0 ^m .29	44 ^s .8 ^s 0 ^m .3
31	5 ^s .74 ^s 0 ^m .28	7 ^s .2 ^s 0 ^m .7	11 ^s .76 ^s 0 ^m .38	6 ^s .7 ^s 1 ^m .4	15 ^s .74 ^s 0 ^m .28	45 ^s .1 ^s 0 ^m .7
Apr. 10	6 ^s .02 ^s 0 ^m .25	7 ^s .9 ^s 1 ^m .1	12 ^s .14 ^s 0 ^m .35	8 ^s .1 ^s 1 ^m .9	16 ^s .02 ^s 0 ^m .27	45 ^s .8 ^s 1 ^m .0
20	6 ^s .27 ^s 0 ^m .23	9 ^s .0 ^s 1 ^m .4	12 ^s .49 ^s 0 ^m .31	10 ^s .0 ^s 2 ^m .3	16 ^s .29 ^s 0 ^m .25	46 ^s .8 ^s 1 ^m .3
30	6 ^s .50 ^s 0 ^m .21	10 ^s .4 ^s 1 ^m .7	12 ^s .80 ^s 0 ^m .26	12 ^s .3 ^s 2 ^m .7	16 ^s .54 ^s 0 ^m .22	48 ^s .1 ^s 1 ^m .6
May 10	6 ^s .71 ^s 0 ^m .18	12 ^s .1 ^s 1 ^m .8	13 ^s .06 ^s 0 ^m .21	15 ^s .0 ^s 2 ^m .9	16 ^s .76 ^s 0 ^m .20	49 ^s .7 ^s 1 ^m .8
20	6 ^s .89 ^s 0 ^m .15	13 ^s .9 ^s 1 ^m .9	13 ^s .27 ^s 0 ^m .16	17 ^s .9 ^s 3 ^m .1	16 ^s .96 ^s 0 ^m .17	51 ^s .5 ^s 1 ^m .8
30	7 ^s .04 ^s 0 ^m .12	15 ^s .8 ^s 2 ^m .0	13 ^s .43 ^s 0 ^m .10	21 ^s .0 ^s 3 ^m .3	17 ^s .13 ^s 0 ^m .14	53 ^s .3 ^s 1 ^m .9
June 9	7 ^s .16 ^s 0 ^m .08	17 ^s .8 ^s 1 ^m .9	13 ^s .53 ^s 0 ^m .04	24 ^s .3 ^s 3 ^m .2	17 ^s .27 ^s 0 ^m .10	55 ^s .2 ^s 1 ^m .9
19	7 ^s .24 ^s 0 ^m .04	19 ^s .7 ^s 1 ^m .8	13 ^s .57 ^s 0 ^m .01	27 ^s .5 ^s 3 ^m .0	17 ^s .37 ^s 0 ^m .07	57 ^s .1 ^s 1 ^m .8
29	7 ^s .28 ^s 0 ^m .01	21 ^s .5 ^s 1 ^m .7	13 ^s .56 ^s 0 ^m .08	30 ^s .5 ^s 2 ^m .9	17 ^s .44 ^s 0 ^m .02	58 ^s .9 ^s 1 ^m .7
July 9	7 ^s .29 ^s 0 ^m .03	23 ^s .2 ^s 1 ^m .5	13 ^s .48 ^s 0 ^m .14	33 ^s .4 ^s 2 ^m .6	17 ^s .46 ^s 0 ^m .02	60 ^s .6 ^s 1 ^m .6
19	7 ^s .26 ^s 0 ^m .07	24 ^s .7 ^s 1 ^m .3	13 ^s .34 ^s 0 ^m .18	36 ^s .0 ^s 2 ^m .3	17 ^s .44 ^s 0 ^m .05	62 ^s .2 ^s 1 ^m .3
29	7 ^s .19 ^s 0 ^m .10	26 ^s .0 ^s 1 ^m .1	13 ^s .16 ^s 0 ^m .24	38 ^s .3 ^s 1 ^m .9	17 ^s .39 ^s 0 ^m .08	63 ^s .5 ^s 1 ^m .2
Aug. 8	7 ^s .09 ^s 0 ^m .13	27 ^s .1 ^s 0 ^m .8	12 ^s .92 ^s 0 ^m .28	40 ^s .2 ^s 1 ^m .5	17 ^s .31 ^s 0 ^m .12	64 ^s .7 ^s 0 ^m .9
18	6 ^s .96 ^s 0 ^m .16	27 ^s .9 ^s 0 ^m .6	12 ^s .64 ^s 0 ^m .31	41 ^s .7 ^s 1 ^m .0	17 ^s .19 ^s 0 ^m .15	65 ^s .6 ^s 0 ^m .6
28	6 ^s .80 ^s 0 ^m .16	28 ^s .5 ^s 0 ^m .3	12 ^s .33 ^s 0 ^m .33	42 ^s .7 ^s 0 ^m .5	17 ^s .04 ^s 0 ^m .16	66 ^s .2 ^s 0 ^m .4
Sept. 7	6 ^s .64 ^s 0 ^m .18	28 ^s .8 ^s 0 ^m .0	12 ^s .00 ^s 0 ^m .35	43 ^s .2 ^s 0 ^m .1	16 ^s .88 ^s 0 ^m .17	66 ^s .6 ^s 0 ^m .1
17	6 ^s .46 ^s 0 ^m .17	28 ^s .8 ^s 0 ^m .3	11 ^s .65 ^s 0 ^m .35	43 ^s .3 ^s 0 ^m .5	16 ^s .71 ^s 0 ^m .18	66 ^s .7 ^s 0 ^m .2
27	6 ^s .29 ^s 0 ^m .17	28 ^s .5 ^s 0 ^m .6	11 ^s .30 ^s 0 ^m .33	42 ^s .8 ^s 1 ^m .0	16 ^s .53 ^s 0 ^m .17	66 ^s .5 ^s 0 ^m .5
Oct. 7	6 ^s .12 ^s 0 ^m .14	27 ^s .9 ^s 0 ^m .9	10 ^s .97 ^s 0 ^m .31	41 ^s .8 ^s 1 ^m .4	16 ^s .36 ^s 0 ^m .15	66 ^s .0 ^s 0 ^m .8
17	5 ^s .98 ^s 0 ^m .11	27 ^s .0 ^s 1 ^m .3	10 ^s .66 ^s 0 ^m .28	40 ^s .4 ^s 2 ^m .0	16 ^s .21 ^s 0 ^m .12	65 ^s .2 ^s 1 ^m .0
27	5 ^s .87 ^s 0 ^m .08	25 ^s .7 ^s 1 ^m .5	10 ^s .38 ^s 0 ^m .23	38 ^s .4 ^s 2 ^m .4	16 ^s .09 ^s 0 ^m .08	64 ^s .2 ^s 1 ^m .4
Nov. 6	5 ^s .79 ^s 0 ^m .03	24 ^s .2 ^s 1 ^m .7	10 ^s .15 ^s 0 ^m .17	36 ^s .0 ^s 2 ^m .8	16 ^s .01 ^s 0 ^m .05	62 ^s .8 ^s 1 ^m .4
16	5 ^s .76 ^s 0 ^m .02	22 ^s .5 ^s 2 ^m .0	9 ^s .98 ^s 0 ^m .10	33 ^s .2 ^s 3 ^m .1	15 ^s .96 ^s 0 ^m .00	
26	5 ^s .78 ^s 0 ^m .06	20 ^s .5 ^s 2 ^m .2	9 ^s .88 ^s 0 ^m .04	30 ^s .1 ^s 3 ^m .4	15 ^s .96 ^s 0 ^m .05	
Dec. 6	5 ^s .84 ^s 0 ^m .13	18 ^s .3 ^s 2 ^m .6	9 ^s .84 ^s 0 ^m .04	26 ^s .7 ^s 3 ^m .9	16 ^s .01 ^s 0 ^m .1	
16	5 ^s .97 ^s 0 ^m .16	15 ^s .7 ^s 2 ^m .4	9 ^s .88 ^s 0 ^m .11	22 ^s .8 ^s 3 ^m .6	16 ^s .11 ^s 0 ^m .1	
26	6 ^s .13 ^s 0 ^m .20	13 ^s .3 ^s 2 ^m .4	9 ^s .99 ^s 0 ^m .18	19 ^s .2 ^s 3 ^m .6	16 ^s .25 ^s 0 ^m .1	
36	6 ^s .33 ^s 0 ^m .20	10 ^s .9 ^s 2 ^m .4	10 ^s .17 ^s 0 ^m .18	15 ^s .6 ^s 3 ^m .6	16 ^s .4 ^s 0 ^m .1	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	σ Octantis.		γ Draconis.	
	R. A.	Dec. South.	R. A.	Dec. North.
	h 17	° 89	h 17	° 51
Jan. 1	^m 38 ^s 47.91 ^a 10.73	['] 16 ["] 36.8 ["] 2.9	^m 53 ^s 13.46 ^a 0.17	['] 29 ["] 75.0 ["] 3.5
11	38 58.64 13.54	33.9 2.5	13.63 0.23	71.5 3.3
21	39 12.18 16.14	31.4 2.2	13.86 0.28	68.2 3.0
31	39 28.32 17.66	29.2 1.7	14.14 0.33	65.2 2.5
Feb. 10	39 45.98 19.33	27.5 1.3	14.47 0.37	62.7 2.1
20	40 5.31 20.33	26.2 0.8	14.84 0.39	60.6 1.5
Mar. 1	40 25.64 20.88	25.4 0.3	15.23 0.40	59.1 0.8
11	40 46.52 20.91	25.1 0.2	15.63 0.41	58.3 0.1
21	41 7.43 20.53	25.3 0.7	16.04 0.40	58.2 0.4
31	41 27.96 19.73	26.0 1.2	16.44 0.39	58.6 1.1
Apr. 10	41 47.69 18.50	27.2 1.5	16.83 0.36	59.7 1.7
20	42 6.19 16.94	28.7 2.0	17.19 0.33	61.4 2.1
30	42 23.13 15.01	30.7 2.3	17.52 0.29	63.5 2.6
May 10	42 38.14 12.79	33.0 2.7	17.81 0.25	66.1 2.9
20	42 50.93 10.30	35.7 2.9	18.06 0.20	69.0 3.1
30	43 1.23 7.59	38.6 3.0	18.26 0.14	72.1 3.3
June 9	43 8.82 4.74	41.6 3.1	18.40 0.08	75.3 3.2
19	43 13.56 1.76	44.7 3.2	18.48 0.02	78.5 3.2
29	43 15.32 1.24	47.9 3.1	18.50 0.04	81.7 3.0
July 9	43 14.08 4.16	51.0 2.9	18.46 0.10	84.7 2.8
19	43 9.92 6.96	53.9 2.7	18.36 0.15	87.5 2.6
29	43 2.96 9.53	56.6 2.4	18.21 0.21	90.1 2.2
Aug. 8	42 53.43 11.76	16 59.0 2.0	18.00 0.25	92.3 1.7
18	42 41.67 13.62	17 1.0 1.5	17.75 0.28	94.0 1.4
28	42 28.05 14.96	2.5 1.0	17.47 0.32	95.4 0.9
Sept. 7	42 13.09 15.75	3.5 0.4	17.15 0.34	96.3 0.4
17	41 57.34 15.91	3.9 0.3	16.81 0.34	96.7 0.1
27	41 41.43 15.67	3.6 0.8	16.47 0.34	96.6 0.7
Oct. 7	41 25.96 14.40	2.8 1.3	16.13 0.31	95.9 1.1
17	41 11.56 12.68	17 1.5 2.0	15.82 0.29	94.8 1.6
27	40 58.88 10.43	16 59.5 2.4	15.53 0.25	93.2 2.1
Nov. 6	40 48.45 7.71	57.1 2.7	15.28 0.20	91.1 2.6
16	40 40.74 4.58	54.4 3.1	15.08 0.14	88.5 2.9
26	40 36.16 1.30	51.3 3.2	14.94 0.07	85.6 3.2
Dec. 6	40 34.86 2.13	48.1 3.3	14.87 0.01	82.4 3.4
16	{ ⁴⁰ 35.39} 5.86	{ ⁴⁴ 45} 3.2	14.86 0.08	79.0 3.9
26	40 43.25 9.12	41.3 3.0	14.94 0.13	75.1 3.5
36	40 52.37	16 38.3	53 15.07	29 71.6

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	μ^1 Sagittarii.		α Lyrae. (Vega)		β Lyrae.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	h m 18 5	o ' 21 5	h m 18 32	o ' 38 38	h m 18 44	o ' 33 11
Jan. 1	7 ^s .06 ^s 0 ^s .20	39 ^s .4 ^s 0 ^s .2	1 ^s .62 ^s 0 ^s .13	58 ^s .2 ^s 3 ^s .1	43 ^s .72 ^s 0 ^s .11	43 ^s .6 ^s 2 ^s .9
11	7 ^s .26 ^s 0 ^s .24	39 ^s .6 ^s 0 ^s .3	1 ^s .75 ^s 0 ^s .17	55 ^s .1 ^s 3 ^s .1	43 ^s .83 ^s 0 ^s .16	40 ^s .7 ^s 2 ^s .9
21	7 ^s .50 ^s 0 ^s .26	39 ^s .9 ^s 0 ^s .3	1 ^s .92 ^s 0 ^s .22	52 ^s .0 ^s 2 ^s .9	43 ^s .99 ^s 0 ^s .20	37 ^s .8 ^s 2 ^s .7
31	7 ^s .76 ^s 0 ^s .29	40 ^s .2 ^s 0 ^s .3	2 ^s .14 ^s 0 ^s .25	49 ^s .1 ^s 2 ^s .5	44 ^s .19 ^s 0 ^s .23	35 ^s .1 ^s 2 ^s .5
Feb. 10	8 ^s .05 ^s 0 ^s .31	40 ^s .5 ^s 0 ^s .3	2 ^s .39 ^s 0 ^s .28	46 ^s .6 ^s 2 ^s .1	44 ^s .42 ^s 0 ^s .26	32 ^s .6 ^s 2 ^s .0
20	8 ^s .36 ^s 0 ^s .32	40 ^s .8 ^s 0 ^s .2	2 ^s .67 ^s 0 ^s .31	44 ^s .5 ^s 1 ^s .6	44 ^s .68 ^s 0 ^s .29	30 ^s .6 ^s 1 ^s .6
Mar. 1	8 ^s .68 ^s 0 ^s .33	41 ^s .0 ^s 0 ^s .1	2 ^s .98 ^s 0 ^s .33	42 ^s .9 ^s 1 ^s .1	44 ^s .97 ^s 0 ^s .31	29 ^s .0 ^s 1 ^s .0
11	9 ^s .01 ^s 0 ^s .32	41 ^s .1 ^s 0 ^s .0	3 ^s .31 ^s 0 ^s .34	41 ^s .8 ^s 0 ^s .4	45 ^s .28 ^s 0 ^s .32	28 ^s .0 ^s 0 ^s .5
21	9 ^s .33 ^s 0 ^s .33	41 ^s .1 ^s 0 ^s .1	3 ^s .65 ^s 0 ^s .34	41 ^s .4 ^s 0 ^s .7	45 ^s .60 ^s 0 ^s .32	27 ^s .5 ^s 0 ^s .0
31	9 ^s .66 ^s 0 ^s .32	41 ^s .0 ^s 0 ^s .1	3 ^s .99 ^s 0 ^s .34	41 ^s .5 ^s 0 ^s .7	45 ^s .92 ^s 0 ^s .33	27 ^s .5 ^s 0 ^s .6
Apr. 10	9 ^s .98 ^s 0 ^s .32	40 ^s .9 ^s 0 ^s .2	4 ^s .33 ^s 0 ^s .33	42 ^s .2 ^s 1 ^s .3	46 ^s .25 ^s 0 ^s .32	28 ^s .1 ^s 1 ^s .2
20	10 ^s .30 ^s 0 ^s .30	40 ^s .7 ^s 0 ^s .3	4 ^s .66 ^s 0 ^s .32	43 ^s .5 ^s 1 ^s .8	46 ^s .57 ^s 0 ^s .31	29 ^s .3 ^s 1 ^s .6
30	10 ^s .60 ^s 0 ^s .28	40 ^s .4 ^s 0 ^s .3	4 ^s .98 ^s 0 ^s .29	45 ^s .3 ^s 2 ^s .2	46 ^s .88 ^s 0 ^s .29	30 ^s .9 ^s 2 ^s .0
May 10	10 ^s .88 ^s 0 ^s .27	40 ^s .1 ^s 0 ^s .2	5 ^s .27 ^s 0 ^s .26	47 ^s .5 ^s 2 ^s .5	47 ^s .17 ^s 0 ^s .27	32 ^s .9 ^s 2 ^s .4
20	11 ^s .15 ^s 0 ^s .23	39 ^s .9 ^s 0 ^s .3	5 ^s .53 ^s 0 ^s .23	50 ^s .0 ^s 2 ^s .8	47 ^s .44 ^s 0 ^s .23	35 ^s .3 ^s 2 ^s .7
30	11 ^s .38 ^s 0 ^s .20	39 ^s .6 ^s 0 ^s .3	5 ^s .76 ^s 0 ^s .19	52 ^s .8 ^s 3 ^s .0	47 ^s .67 ^s 0 ^s .20	38 ^s .0 ^s 2 ^s .8
June 9	11 ^s .58 ^s 0 ^s .17	39 ^s .3 ^s 0 ^s .1	5 ^s .95 ^s 0 ^s .14	55 ^s .8 ^s 3 ^s .0	47 ^s .87 ^s 0 ^s .16	40 ^s .8 ^s 2 ^s .9
19	11 ^s .75 ^s 0 ^s .13	39 ^s .2 ^s 0 ^s .1	6 ^s .09 ^s 0 ^s .10	58 ^s .8 ^s 3 ^s .1	48 ^s .03 ^s 0 ^s .12	43 ^s .7 ^s 2 ^s .9
29	11 ^s .88 ^s 0 ^s .09	39 ^s .1 ^s 0 ^s .1	6 ^s .19 ^s 0 ^s .05	61 ^s .9 ^s 2 ^s .9	48 ^s .15 ^s 0 ^s .07	46 ^s .6 ^s 2 ^s .8
July 9	11 ^s .97 ^s 0 ^s .04	39 ^s .0 ^s 0 ^s .1	6 ^s .24 ^s 0 ^s .01	64 ^s .8 ^s 2 ^s .8	48 ^s .22 ^s 0 ^s .02	49 ^s .4 ^s 2 ^s .7
19	12 ^s .01 ^s 0 ^s .00	39 ^s .1 ^s 0 ^s .0	6 ^s .23 ^s 0 ^s .05	67 ^s .6 ^s 2 ^s .6	48 ^s .24 ^s 0 ^s .03	52 ^s .1 ^s 2 ^s .5
29	12 ^s .01 ^s 0 ^s .05	39 ^s .1 ^s 0 ^s .1	6 ^s .18 ^s 0 ^s .10	70 ^s .2 ^s 2 ^s .4	48 ^s .21 ^s 0 ^s .07	54 ^s .6 ^s 2 ^s .3
Aug. 8	11 ^s .96 ^s 0 ^s .09	39 ^s .2 ^s 0 ^s .2	6 ^s .08 ^s 0 ^s .15	72 ^s .6 ^s 2 ^s .0	48 ^s .14 ^s 0 ^s .12	56 ^s .9 ^s 2 ^s .0
18	11 ^s .87 ^s 0 ^s .12	39 ^s .4 ^s 0 ^s .1	5 ^s .93 ^s 0 ^s .18	74 ^s .6 ^s 1 ^s .6	48 ^s .02 ^s 0 ^s .15	58 ^s .9 ^s 1 ^s .6
28	11 ^s .75 ^s 0 ^s .14	39 ^s .5 ^s 0 ^s .1	5 ^s .75 ^s 0 ^s .21	76 ^s .2 ^s 1 ^s .2	47 ^s .87 ^s 0 ^s .18	60 ^s .5 ^s 1 ^s .2
Sept. 7	11 ^s .61 ^s 0 ^s .16	39 ^s .6 ^s 0 ^s .1	5 ^s .54 ^s 0 ^s .24	77 ^s .4 ^s 0 ^s .8	47 ^s .69 ^s 0 ^s .21	61 ^s .7 ^s 0 ^s .9
17	11 ^s .45 ^s 0 ^s .17	39 ^s .7 ^s 0 ^s .0	5 ^s .30 ^s 0 ^s .25	78 ^s .2 ^s 0 ^s .4	47 ^s .48 ^s 0 ^s .23	62 ^s .6 ^s 0 ^s .4
27	11 ^s .28 ^s 0 ^s .17	39 ^s .7 ^s 0 ^s .0	5 ^s .05 ^s 0 ^s .25	78 ^s .6 ^s 0 ^s .1	47 ^s .25 ^s 0 ^s .23	63 ^s .0 ^s 0 ^s .0
Oct. 7	11 ^s .11 ^s 0 ^s .15	39 ^s .7 ^s 0 ^s .0	4 ^s .80 ^s 0 ^s .25	78 ^s .5 ^s 0 ^s .0		63 ^s .0 ^s 0 ^s .4
17	10 ^s .96 ^s 0 ^s .13	39 ^s .7 ^s 0 ^s .1	4 ^s .55 ^s 0 ^s .23	77 ^s .9 ^s		62 ^s .6 ^s 0 ^s .9
27	10 ^s .83 ^s 0 ^s .10	39 ^s .6 ^s 0 ^s .0	4 ^s .32 ^s 0 ^s .19	76 ^s .0 ^s		61 ^s .7 ^s 1 ^s .3
Nov. 6	10 ^s .73 ^s 0 ^s .05	39 ^s .6 ^s 0 ^s .1	4 ^s .13 ^s 0 ^s .16	75		60 ^s .4 ^s
16	10 ^s .68 ^s 0 ^s .01	39 ^s .5 ^s 0 ^s .0	3 ^s .97 ^s 0 ^s .12			58
26	10 ^s .67 ^s 0 ^s .03	39 ^s .5 ^s 0 ^s .0	3 ^s .85 ^s 0 ^s .07			51
Dec. 6	10 ^s .70 ^s 0 ^s .09	39 ^s .5 ^s 0 ^s .1	3 ^s .78 ^s 0 ^s .01			1
16	10 ^s .79 ^s 0 ^s .15	39 ^s .6 ^s 0 ^s .2	3 ^s .77 ^s 0 ^s .0			
26	10 ^s .94 ^s 0 ^s .18	39 ^s .8 ^s 0 ^s .2	3 ^s .81 ^s 0 ^s .			
36)	11 ^s .12 ^s	40 ^s .0 ^s	3 ^s .91 ^s			

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.				
Day of the Month.	α Trianguli Australis.		ε Ursæ Minoris.	
	R. A.	Dec. South.	R. A.	Dec. North.
	h 16	° 68	h 17	° 82
Jan. 1	^m 33 ^s 23·08 ["] 0·61	['] 45 ["] 16·6 ["] 1·5	^m 0 ^s 44·71 ["] 0·66	['] 15 ["] 46·5 ["] 1·3
11	23·69 0·68	15·1 1·1	45·37 0·95	43·2 1·0
21	24·37 0·74	14·0 0·7	46·32 1·19	40·2 2·5
31	25·11 0·77	13·3 0·3	47·51 1·38	37·7 2·0
Feb. 10	25·88 0·79	13·0 0·2	48·89 1·52	35·7 1·4
20	26·67 0·79	13·2 0·5	50·41 1·59	34·3 0·8
Mar. 1	27·46 0·77	13·7 0·9	52·00 1·62	33·5 0·1
11	28·23 0·75	14·6 1·3	53·62 1·58	33·4 0·6
21	28·98 0·71	15·9 1·7	55·20 1·47	34·0 1·1
31	29·69 0·66	17·6 1·9	56·67 1·33	35·1 1·7
Apr. 10	30·35 0·60	19·5 2·1	58·00 1·13	36·8 1·3
20	30·95 0·53	21·6 2·4	59·13 0·90	39·1 2·6
May 30	31·48 0·46	24·0 2·5	60·03 0·65	41·7 4·8
10	31·94 0·38	26·5 2·6	60·68 0·37	44·5 3·1
20	32·32 0·28	29·1 2·6	61·05 0·09	47·6 3·1
30	32·60 0·19	31·7 2·7	61·14 0·20	50·8 3·1
June 9	32·79 0·09	34·4 2·6	60·94 0·47	53·9 3·1
19	32·88 0·00	37·0 2·5	60·47 0·74	57·0 2·8
29	32·88 0·11	39·5 2·2	59·73 0·98	59·8 2·6
July 9	32·77 0·20	41·7 2·0	58·75 1·20	62·4 2·3
19	32·57 0·28	43·7 1·7	57·55 1·39	64·7 1·8
29	32·29 0·36	45·4 1·3	56·16 1·55	66·5 1·4
Aug. 8	31·93 0·42	46·7 0·9	54·61 1·68	67·9 1·0
18	31·51 0·47	47·6 0·4	52·93 1·77	68·9 0·5
28	31·04 0·49	48·0 0·0	51·16 1·83	69·4 0·0
Sept. 7	30·55 0·48	48·0 0·5	49·33 1·84	69·4 0·5
17	30·07 0·46	47·5 1·0	47·49 1·80	68·9 1·0
27	29·61 0·41	46·5 1·5	45·69 1·73	67·9 1·5
Oct. 7	29·20 0·34	45·0 1·8	43·96 1·62	66·4 2·0
17	28·86 0·25	43·2 2·1	42·34 1·46	64·4 2·4
27	28·61 0·15	41·1 2·4	40·88 1·26	62·0 2·8
Nov. 6	28·46 0·02	38·7 2·5	39·62 1·02	59·2 3·1
16	28·44 0·11	36·2 2·5	38·60 0·75	56·1 3·4
26	28·55 0·26	33·7 2·6	37·85 0·46	52·7 3·8
Dec. 6	28·81 0·37	31·1 2·3	37·39 0·15	49·2 4·0
16	29·18 0·48	28·8 2·1	37·24 0·20	45·2 3·6
	29·66 0·57	26·7 1·7	37·44 0·50	41·6 3·4
	33 30·23	45 25·0	0 37·94	35 38·2

FIXED STARS, 1856.

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APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Herculis.		β Draconis.			α Ophiuchi.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.	
	h m	° ' "	h m	° ' "	h m	° ' "	
	17 8	14 33	17 27	52 24	17 28	12 39	
Jan.							
I	3 ^s .20 ^s	18 ^s .1 ^s	8 ^s .57 ^s	21 ^s .5 ^s	13 ^s .27 ^s	55 ^s .8 ^s	
11	3 ^s .42 ^s	15 ^s .6 ^s	8 ^s .78 ^s	18 ^s .0 ^s	13 ^s .47 ^s	53 ^s .5 ^s	
21	3 ^s .67 ^s	13 ^s .4 ^s	9 ^s .05 ^s	14 ^s .8 ^s	13 ^s .71 ^s	51 ^s .4 ^s	
31	3 ^s .95 ^s	11 ^s .4 ^s	9 ^s .37 ^s	11 ^s .9 ^s	13 ^s .97 ^s	49 ^s .5 ^s	
	0 ^s .29	1 ^s .7	0 ^s .36	2 ^s .4	0 ^s .28	1 ^s .7	
Feb.							
10	4 ^s .24 ^s	9 ^s .7 ^s	9 ^s .73 ^s	9 ^s .5 ^s	14 ^s .25 ^s	47 ^s .8 ^s	
20	4 ^s .55 ^s	8 ^s .3 ^s	10 ^s .12 ^s	7 ^s .7 ^s	14 ^s .55 ^s	46 ^s .4 ^s	
Mar.							
I	4 ^s .85 ^s	7 ^s .4 ^s	10 ^s .53 ^s	6 ^s .5 ^s	14 ^s .85 ^s	45 ^s .5 ^s	
11	5 ^s .16 ^s	6 ^s .9 ^s	10 ^s .95 ^s	5 ^s .9 ^s	15 ^s .15 ^s	44 ^s .9 ^s	
	0 ^s .29	0 ^s .1	0 ^s .41	0 ^s .1	0 ^s .30	0 ^s .1	
21	5 ^s .45 ^s	6 ^s .8 ^s	11 ^s .36 ^s	6 ^s .0 ^s	15 ^s .45 ^s	44 ^s .8 ^s	
31	5 ^s .74 ^s	7 ^s .2 ^s	11 ^s .76 ^s	6 ^s .7 ^s	15 ^s .74 ^s	45 ^s .1 ^s	
Apr.							
10	6 ^s .02 ^s	7 ^s .9 ^s	12 ^s .14 ^s	8 ^s .1 ^s	16 ^s .02 ^s	45 ^s .8 ^s	
20	6 ^s .27 ^s	9 ^s .0 ^s	12 ^s .49 ^s	10 ^s .0 ^s	16 ^s .29 ^s	46 ^s .8 ^s	
	0 ^s .23	1 ^s .4	0 ^s .31	2 ^s .3	0 ^s .25	1 ^s .3	
30	6 ^s .50 ^s	10 ^s .4 ^s	12 ^s .80 ^s	12 ^s .3 ^s	16 ^s .54 ^s	48 ^s .1 ^s	
May							
10	6 ^s .71 ^s	12 ^s .1 ^s	13 ^s .06 ^s	15 ^s .0 ^s	16 ^s .76 ^s	49 ^s .7 ^s	
20	6 ^s .89 ^s	13 ^s .9 ^s	13 ^s .27 ^s	17 ^s .9 ^s	16 ^s .96 ^s	51 ^s .5 ^s	
30	7 ^s .04 ^s	15 ^s .8 ^s	13 ^s .43 ^s	21 ^s .0 ^s	17 ^s .13 ^s	53 ^s .3 ^s	
	0 ^s .12	2 ^s .0	0 ^s .10	3 ^s .3	0 ^s .14	1 ^s .9	
June							
9	7 ^s .16 ^s	17 ^s .8 ^s	13 ^s .53 ^s	24 ^s .3 ^s	17 ^s .27 ^s	55 ^s .2 ^s	
19	7 ^s .24 ^s	19 ^s .7 ^s	13 ^s .57 ^s	27 ^s .5 ^s	17 ^s .37 ^s	57 ^s .1 ^s	
29	7 ^s .28 ^s	21 ^s .5 ^s	13 ^s .56 ^s	30 ^s .5 ^s	17 ^s .44 ^s	58 ^s .9 ^s	
July							
9	7 ^s .29 ^s	23 ^s .2 ^s	13 ^s .48 ^s	33 ^s .4 ^s	17 ^s .46 ^s	60 ^s .6 ^s	
	0 ^s .03	1 ^s .5	0 ^s .14	2 ^s .6	0 ^s .02	1 ^s .6	
19	7 ^s .26 ^s	24 ^s .7 ^s	13 ^s .34 ^s	36 ^s .0 ^s	17 ^s .44 ^s	62 ^s .2 ^s	
29	7 ^s .19 ^s	26 ^s .0 ^s	13 ^s .16 ^s	38 ^s .3 ^s	17 ^s .39 ^s	63 ^s .5 ^s	
Aug.							
8	7 ^s .09 ^s	27 ^s .1 ^s	12 ^s .92 ^s	40 ^s .2 ^s	17 ^s .31 ^s	64 ^s .7 ^s	
18	6 ^s .96 ^s	27 ^s .9 ^s	12 ^s .64 ^s	41 ^s .7 ^s	17 ^s .19 ^s	65 ^s .6 ^s	
	0 ^s .16	0 ^s .6	0 ^s .31	1 ^s .0	0 ^s .15	0 ^s .6	
28	6 ^s .80 ^s	28 ^s .5 ^s	12 ^s .33 ^s	42 ^s .7 ^s	17 ^s .04 ^s	66 ^s .2 ^s	
Sept.							
7	6 ^s .64 ^s	28 ^s .8 ^s	12 ^s .00 ^s	43 ^s .2 ^s	16 ^s .88 ^s	66 ^s .6 ^s	
17	6 ^s .46 ^s	28 ^s .8 ^s	11 ^s .65 ^s	43 ^s .3 ^s	16 ^s .71 ^s	66 ^s .7 ^s	
27	6 ^s .29 ^s	28 ^s .5 ^s	11 ^s .30 ^s	42 ^s .8 ^s	16 ^s .53 ^s	66 ^s .5 ^s	
	0 ^s .17	0 ^s .6	0 ^s .33	1 ^s .0	0 ^s .17	0 ^s .5	
Oct.							
7	6 ^s .12 ^s	27 ^s .9 ^s	10 ^s .97 ^s	41 ^s .8 ^s	16 ^s .36 ^s	66 ^s .0 ^s	
17	5 ^s .98 ^s	27 ^s .0 ^s	10 ^s .66 ^s	40 ^s .4 ^s	16 ^s .21 ^s	65 ^s .2 ^s	
27	5 ^s .87 ^s	25 ^s .7 ^s	10 ^s .38 ^s	38 ^s .4 ^s	16 ^s .09 ^s	64 ^s .2 ^s	
Nov.							
6	5 ^s .79 ^s	24 ^s .2 ^s	10 ^s .15 ^s	36 ^s .0 ^s	16 ^s .01 ^s	62 ^s .8 ^s	
	0 ^s .03	1 ^s .7	0 ^s .17	2 ^s .8	0 ^s .05	1 ^s .6	
16	5 ^s .76 ^s	22 ^s .5 ^s	9 ^s .98 ^s	33 ^s .2 ^s	15 ^s .96 ^s	61 ^s .2 ^s	
26	5 ^s .78 ^s	20 ^s .5 ^s	9 ^s .88 ^s	30 ^s .1 ^s	15 ^s .96 ^s	59 ^s .4 ^s	
Dec.							
6	5 ^s .84 ^s	18 ^s .3 ^s	9 ^s .84 ^s	26 ^s .7 ^s	16 ^s .01 ^s	57 ^s .4 ^s	
16	5 ^s .97 ^s	15 ^s .7 ^s	9 ^s .88 ^s	22 ^s .8 ^s	16 ^s .11 ^s	55 ^s .0 ^s	
	0 ^s .16	2 ^s .4	0 ^s .11	3 ^s .6	0 ^s .14	2 ^s .2	
26	6 ^s .13 ^s	13 ^s .3 ^s	9 ^s .99 ^s	19 ^s .2 ^s	16 ^s .25 ^s	52 ^s .8 ^s	
36	6 ^s .33 ^s	10 ^s .9 ^s	10 ^s .17 ^s	15 ^s .6 ^s	16 ^s .44 ^s	50 ^s .5 ^s	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	σ Octantis.		γ Draconis.	
	R. A.	Dec. South.	R. A.	Dec. North.
	^h 17	^o 89	^h 17	^o 51
Jan. 1	^m 38 ^s 47 ^a 91 ^a 10'73	['] 16 ["] 36'8 ["] 2'9	^m 53 ^s 13'46 ^s 0'17	['] 29 ["] 75'0 ["] 3'5
11	38 58'64 13'54	33'9 2'5	13'63 0'23	71'5 3'3
21	39 12'18 16'14	31'4 2'2	13'86 0'28	68'2 3'0
31	39 28'32 17'66	29'2 1'7	14'14 0'33	65'2 2'5
Feb. 10	39 45'98 19'33	27'5 1'3	14'47 0'37	62'7 2'1
20	40 5'31 20'33	26'2 0'8	14'84 0'39	60'6 1'5
Mar. 1	40 25'64 20'88	25'4 0'3	15'23 0'40	59'1 0'8
11	40 46'52 20'91	25'1 0'2	15'63 0'41	58'3 0'1
21	41 7'43 20'53	25'3 0'7	16'04 0'40	58'2 0'4
31	41 27'96 19'73	26'0 1'2	16'44 0'39	58'6 1'1
Apr. 10	41 47'69 18'50	27'2 1'5	16'83 0'36	59'7 1'7
20	42 6'19 16'94	28'7 2'0	17'19 0'33	61'4 2'1
30	42 23'13 15'01	30'7 2'3	17'52 0'29	63'5 2'6
May 10	42 38'14 12'79	33'0 2'7	17'81 0'25	66'1 2'9
20	42 50'93 10'30	35'7 2'9	18'06 0'20	69'0 3'1
30	43 1'23 7'59	38'6 3'0	18'26 0'14	72'1 3'3
June 9	43 8'82 4'74	41'6 3'1	18'40 0'08	75'3 3'3
19	43 13'56 1'76	44'7 3'2	18'48 0'02	78'5 3'2
29	43 15'32 1'24	47'9 3'1	18'50 0'04	81'7 3'0
July 9	43 14'08 4'16	51'0 2'9	18'46 0'10	84'7 2'8
19	43 9'92 6'96	53'9 2'7	18'36 0'15	87'5 2'6
29	43 2'96 9'53	56'6 2'4	18'21 0'21	90'1 2'2
Aug. 8	42 53'43 11'76	16 59'0 2'0	18'00 0'25	92'3 1'7
18	42 41'67 13'62	17 1'0 1'5	17'75 0'28	94'0 1'4
28	42 28'05 14'96	2'5 1'0	17'47 0'32	95'4 0'9
Sept. 7	42 13'09 15'75	3'5 0'4	17'15 0'34	96'3 0'4
17	41 57'34 15'91	3'9 0'3	16'81 0'34	96'7 0'1
27	41 41'43 15'67	3'6 0'8	16'47 0'34	96'6 0'7
Oct. 7	41 25'96 14'40	2'8 1'3	16'13 0'31	95'9 1'1
17	41 11'56 12'68	17 1'5 2'0	15'82 0'29	94'8 1'6
27	40 58'88 10'43	16 59'5 2'4	15'53 0'25	93'2 2'1
Nov. 6	40 48'45 7'71	57'1 2'7	15'28 0'20	91'1 2'6
16	40 40'74 4'58	54'4 3'1	15'08 0'14	88'5 2'9
26	40 36'16 1'30	51'3 3'2	14'94 0'07	85'6 3'2
Dec. 6	40 34'86 2'13	48'1 3'3	14'87 0'01	82'4 3'4
16	^h 40 ^m 35 ^s 35 } 5'86	['] 44 ["] 45 } 3'2	14'86 0'08	79'0 3'9
26	40 43'25 9'12	41'3 3'0	14'94 0'13	75'1 3'5
36	40 52'37	16 38'3	53 15'07	29 71'6

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

e h	μ ^s Sagittarii.			α Lyrae. (Vega)				β Lyrae.				
	R. A.		Dec. South.	R. A.		Dec. North.		R. A.		Dec. North.		
	h	m	°	'	h	m	°	'	h	m	°	'
	18	5	21	5	18	32	38	38	18	44	33	11
I	7	06	39	4	1	62	58	2	43	72	43	6
II	7	26	39	6	1	75	55	1	43	83	40	7
2I	7	50	39	9	1	92	52	0	43	99	37	8
3I	7	76	40	2	2	14	49	1	44	19	35	1
IO	8	05	40	5	2	39	46	6	44	42	32	6
20	8	36	40	8	2	67	44	5	44	68	30	6
I	8	68	41	0	2	98	42	9	44	97	29	0
II	9	01	41	1	3	31	41	8	45	28	28	0
2I	9	33	41	1	3	65	41	4	45	60	27	5
3I	9	66	41	0	3	99	41	5	45	92	27	5
IO	9	98	40	9	4	33	42	2	46	25	28	1
20	10	30	40	7	4	66	43	5	46	57	29	3
30	10	60	40	4	4	98	45	3	46	88	30	9
IO	10	88	40	1	5	27	47	5	47	17	32	9
20	11	15	39	9	5	53	50	0	47	41	35	3
30	11	38	39	6	5	76	52	8	47	67	38	0
9	11	58	39	3	5	95	55	8	47	87	40	8
19	11	75	39	2	6	09	58	8	48	03	43	7
29	11	88	39	1	6	19	61	9	48	15	46	6
9	11	97	39	0	6	24	64	8	48	22	49	4
19	12	01	39	1	6	23	67	6	48	24	52	1
29	12	01	39	1	6	18	70	2	48	21	54	6
8	11	96	39	2	6	08	72	6	48	14	56	9
18	11	87	39	4	5	93	74	6	48	02	58	9
28	11	75	39	5	5	75	76	2	47	87	60	5
7	11	61	39	6	5	54	77	4	47	69	61	7
17	11	45	39	7	5	30	78	2	47	48	62	6
27	11	28	39	7	5	05	78	6	47	25	63	0
7	11	11	39	7	4	80	78	5	47	02	63	0
17	10	96	39	7	4	55	77	9	46	80	62	6
27	10	83	39	6	4	32	76	9	46	59	61	7
6	10	73	39	6	4	13	75	4	46	41	60	4
16	10	68	39	5	3	97	73	4	46	26	58	7
26	10	67	39	5	3	85	71	1	46	15	56	6
6	10	70	39	5	3	78	68	5	46	09	54	2
16	10	79	39	6	3	77	65	6	46	08	51	6
"		05		01				20				17
26	10	94	39	8	3	81	62	5	46	11	48	7
36	11	12	40	0	3	91	59	1	46	20	45	2

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	ζ Aquila.		δ Aquila.		γ Aquila.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. North.
	h m	° ' "	h m	° ' "	h m	° ' "
	18 58	13 38	19 18	2 49	19 39	10 15
Jan. 1	45° 52' 0" 0.13	60° 9' 2" 2.3	12° 36' 0" 0.11	42° 8' 7" 1.6	22° 94' 0" 0.08	47° 2' 0" 1.5
11	45° 65' 0" 0.15	58° 6' 2" 2.0	12° 47' 0" 0.14	41° 2' 1" 1.4	23° 02' 0" 0.12	45° 5' 0" 1.2
21	45° 80' 0" 0.19	56° 6' 1" 1.9	12° 61' 0" 0.18	39° 8' 1" 1.3	23° 14' 0" 0.15	43° 6' 0" 1.0
31	45° 99' 0" 0.21	54° 7' 1" 1.7	12° 79' 0" 0.20	38° 5' 1" 1.1	23° 29' 0" 0.18	41° 9' 0" 0.8
Feb. 10	46° 20' 0" 0.24	53° 0' 1" 1.4	12° 99' 0" 0.23	37° 4' 0" 0.9	23° 47' 0" 0.21	40° 4' 0" 0.6
20	46° 44' 0" 0.26	51° 6' 1" 1.1	13° 22' 0" 0.25	36° 5' 0" 0.7	23° 68' 0" 0.23	39° 2' 0" 0.4
Mar. 1	46° 70' 0" 0.28	50° 5' 0" 0.7	13° 47' 0" 0.27	35° 8' 0" 0.4	23° 91' 0" 0.26	38° 2' 0" 0.2
11	46° 98' 0" 0.29	49° 8' 0" 0.3	13° 74' 0" 0.28	35° 4' 0" 0.0	24° 17' 0" 0.27	37° 6' 0" 0.0
21	47° 27' 0" 0.30	49° 5' 0" 0.2	14° 02' 0" 0.30	35° 4' 0" 0.3	24° 44' 0" 0.29	37° 4' 0" 0.0
31	47° 57' 0" 0.30	49° 7' 0" 0.6	14° 32' 0" 0.30	35° 7' 0" 0.6	24° 73' 0" 0.30	37° 5' 0" 0.0
Apr. 10	47° 87' 0" 0.30	50° 3' 0" 0.9	14° 62' 0" 0.30	36° 3' 0" 0.9	25° 03' 0" 0.30	38° 1' 0" 0.0
20	48° 17' 0" 0.29	51° 2' 0" 1.3	14° 92' 0" 0.30	37° 2' 0" 1.2	25° 33' 0" 0.30	39° 0' 0" 0.0
30	48° 46' 0" 0.28	52° 5' 0" 1.7	15° 22' 0" 0.29	38° 4' 0" 1.4	25° 63' 0" 0.30	40° 2' 0" 0.0
May 10	48° 74' 0" 0.27	54° 2' 0" 1.9	15° 51' 0" 0.28	39° 8' 0" 1.5	25° 93' 0" 0.29	41° 8' 0" 0.0
20	49° 01' 0" 0.24	56° 1' 0" 2.0	15° 79' 0" 0.26	41° 3' 0" 1.7	26° 22' 0" 0.27	43° 6' 0" 0.0
30	49° 25' 0" 0.22	58° 1' 0" 2.1	16° 05' 0" 0.24	43° 0' 0" 1.7	26° 49' 0" 0.25	45° 5' 0" 0.0
June 9	49° 47' 0" 0.18	60° 2' 0" 2.2	16° 29' 0" 0.21	44° 7' 0" 1.8	26° 74' 0" 0.22	47° 6' 0" 0.0
19	49° 65' 0" 0.15	62° 4' 0" 2.2	16° 50' 0" 0.17	46° 5' 0" 1.7	26° 96' 0" 0.18	49° 7' 0" 0.0
29	49° 80' 0" 0.10	64° 6' 0" 2.1	16° 67' 0" 0.13	48° 2' 0" 1.6	27° 14' 0" 0.15	51° 8' 0" 0.0
July 9	49° 90' 0" 0.06	66° 7' 0" 2.0	16° 80' 0" 0.09	49° 8' 0" 1.5	27° 29' 0" 0.10	53° 9' 0" 0.0
19	49° 96' 0" 0.02	68° 7' 0" 1.8	16° 89' 0" 0.05	51° 3' 0" 1.4	27° 39' 0" 0.06	55° 8' 0" 0.0
29	49° 98' 0" 0.02	70° 5' 0" 1.6	16° 94' 0" 0.01	52° 7' 0" 1.1	27° 45' 0" 0.02	57° 6' 0" 0.0
Aug. 8	49° 96' 0" 0.07	72° 1' 0" 1.4	16° 95' 0" 0.04	53° 8' 0" 1.0	27° 47' 0" 0.03	59° 3' 0" 0.0
18	49° 89' 0" 0.10	73° 5' 0" 1.1	16° 91' 0" 0.08	54° 8' 0" 0.8	27° 44' 0" 0.07	60° 7' 0" 0.0
28	49° 79' 0" 0.13	74° 6' 0" 0.9	16° 83' 0" 0.11	55° 6' 0" 0.6	27° 37' 0" 0.10	61° 9' 0" 0.0
Sept. 7	49° 66' 0" 0.15	75° 5' 0" 0.5	16° 72' 0" 0.13	56° 2' 0" 0.4	27° 27' 0" 0.13	62° 8' 0" 0.0
17	49° 51' 0" 0.17	76° 0' 0" 0.3	16° 59' 0" 0.15	56° 6' 0" 0.2	27° 14' 0" 0.15	63° 5' 0" 0.0
27	49° 34' 0" 0.18	76° 3' 0" 0.0	16° 44' 0" 0.16	56° 8' 0" 0.0	26° 99' 0" 0.17	63° 9' 0" 0.0
Oct. 7	49° 16' 0" 0.18	76° 3' 0" 0.3	16° 28' 0" 0.17	56° 8' 0" 0.2	26° 82' 0" 0.16	64° 1' 0" 0.0
17	48° 98' 0" 0.16	76° 0' 0" 0.5	16° 11' 0" 0.15	56° 6' 0" 0.4	26° 66' 0" 0.16	64° 0' 0" 0.0
27	48° 82' 0" 0.13	75° 5' 0" 0.9	15° 96' 0" 0.13	56° 2' 0" 0.6	26° 50' 0" 0.15	63° 6' 0" 0.0
Nov. 6	48° 69' 0" 0.11	74° 6' 0" 1.2	15° 83' 0" 0.11	55° 6' 0" 0.8	26° 35' 0" 0.12	63° 0' 0" 0.0
16	48° 58' 0" 0.08	73° 4' 0" 1.4	15° 72' 0" 0.07	54° 8' 0" 1.0	26° 23' 0" 0.09	62° 1' 0" 0.0
26	48° 50' 0" 0.03	72° 0' 0" 1.6	15° 65' 0" 0.03	53° 8' 0" 1.2	26° 14' 0" 0.06	61° 0' 0" 0.0
Dec. 6	48° 47' 0" 0.05	70° 4' 0" 1.9	15° 62' 0" 0.00	52° 7' 0" 1.4	26° 08' 0" 0.02	59° 7' 0" 0.0
16	48° 47' 0" 0.05	68° 5' 0" 2.0	15° 62' 0" 0.04	51° 5' 0" 1.4	26° 06' 0" 0.01	58° 2' 0" 0.0
	8° 52' 0" 0.12	66° 5' 0" 2.2	15° 66' 0" 0.10	50° 1' 0" 1.4	26° 07' 0" 0.06	56° 5' 0" 0.0
	64	64° 3'	15° 76'	48° 7'	26° 13'	54° 8'

FIXED STARS, 1856.

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APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

	α Aquilæ. (Altaïr)			β Aquilæ.		
	R. A.	Dec. North.		R. A.	Dec. North.	
	h 19	° 8		h 19	° 6	
	m s	'	"	m s	'	"
I	43 43'55	29 19'9	1'7	48 12'53	2 51'9	1'5
11	43'63	18'2	1'8	12'60	50'4	1'6
21	43'75	16'4	1'5	12'72	48'8	1'4
31	43'90	14'9	1'4	12'86	47'4	1'3
10	44'07	13'5	1'1	13'04	46'1	1'0
20	44'28	12'4	0'9	13'24	45'1	0'8
I	44'51	11'5	0'5	13'47	44'3	0'5
11	44'76	11'0	0'2	13'72	43'8	0'1
21	45'04	10'8	0'2	13'99	43'7	0'2
31	45'33	11'0	0'6	14'27	43'9	0'6
10	45'62	11'6	0'9	14'56	44'5	0'9
20	45'93	12'5	1'2	14'87	45'4	1'2
30	46'23	13'7	1'6	15'17	46'6	1'5
10	46'53	15'3	1'7	15'48	48'1	1'7
20	46'82	17'0	1'9	15'77	49'8	1'8
30	47'10	18'9	2'1	16'05	51'6	1'9
9	47'35	21'0	2'0	16'30	53'5	2'0
19	47'58	23'0	2'1	16'53	55'5	1'9
29	47'77	25'1	2'0	16'72	57'4	1'9
9	47'92	27'1	1'9	16'88	59'3	1'7
19	48'03	29'0	1'7	17'00	61'0	1'6
29	48'09	30'7	1'6	17'07	62'6	1'4
8	48'11	32'3	1'3	17'10	64'0	1'3
18	48'09	33'6	1'1	17'08	65'3	1'0
28	48'03	34'7	0'9	17'02	66'3	0'8
7	47'94	35'6	0'7	16'93	67'1	0'5
17	47'81	36'3	0'4	16'81		
27	47'66	36'7	0'2	16'67		
7	47'50	36'9	0'1	16'51		
17	47'34	36'8	0'4	16'35		
27	47'18	36'4	0'5	16'19		
6	47'04	35'9	0'8	16'05		
16	46'92	35'1	1'1	15		
26	46'83	34'0	1'2	15		
6	46'77	32'8	1'4	15		
16	46'75	31'4	1'5	15		
26	46'76	29'9	1'6			
36	43 46'82	29 28'3				

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH

Day of the Month.	λ Ursæ Minoris.			α Capricorni.		
	B. A.	Dec. North.		R. A.	Dec. South.	
	h 20	° 88		h 20	° 12	
Jan. 1	^m 6 ^s 27.97	['] 52 ["] 42.5	^s 3.0	^m 10 ^s 1.89	['] 59 ["] 27.6	^s 0.4
11	22.66	39.5	3.5	1.96	28.0	0.3
21	^m 19.32	36.0	3.2	2.07	28.3	0.2
31	18.59	32.8	3.2	2.20	28.5	0.0
	1.51		3.2			0.0
Feb. 10	20.10	29.6	3.1	2.37	28.5	0.0
20	23.72	26.5	2.7	2.57	28.5	0.2
Mar. 1	29.29	23.8	2.3	2.79	28.3	0.4
11	36.54	21.5	1.8	3.04	27.9	0.6
	8.63		1.8			0.6
21	45.17	19.7	1.3	3.31	27.3	0.8
31	6 54.74	18.4	0.7	3.60	26.5	0.9
Apr. 10	7 4.93	17.7	0.0	3.90	25.6	1.0
20	15.31	17.7	0.0	4.21	24.6	1.0
	10.16		0.5			1.3
30	25.47	18.2	1.1	4.54	23.4	1.3
May 10	35.08	19.3	1.7	4.86	22.1	1.3
20	43.76	21.0	2.1	5.17	20.8	1.3
30	51.27	23.1	2.6	5.48	19.5	1.3
	6.08		2.6			1.3
June 9	7 57.35	25.7	2.8	5.77	18.2	1.2
19	8 1.82	28.5	3.2	6.03	17.0	1.0
29	4.57	31.7	3.3	6.26	16.0	0.9
July 9	5.50	35.0	3.3	6.45	15.1	0.8
	0.89		3.3			0.8
19	4.61	38.3	3.5	6.60	14.3	0.6
29	8 1.90	41.8	3.3	6.71	13.7	0.5
Aug. 8	7 57.42	45.1	3.3	6.77	13.2	0.3
18	51.29	48.4	3.3	6.78	12.9	0.3
	7.69		3.0			0.1
28	43.60	51.4	2.7	6.76	12.8	0.0
Sept. 7	34.50	54.1	2.4	6.69	12.8	0.2
17	24.19	56.5	2.1	6.59	13.0	0.2
27	12.84	52 58.6	1.6	6.46	13.2	0.2
	12.18		1.6			0.2
Oct. 7	7 0.66	53 0.2	1.2	6.31	13.4	0.3
17	6 47.95	1.4	0.6	6.16	13.7	0.4
27	34.95	2.0	0.1	6.01	14.1	0.4
Nov. 6	21.95	2.1	0.5	5.87	14.5	0.3
	12.67		0.5			0.3
16	6 9.28	1.6	1.0	5.75	14.8	0.4
26	5 57.26	53 0.6	1.5	5.65	15.2	0.4
Dec. 6	46.20	52 59.1	2.0	5.59	15.6	0.4
16	36.45	57.1	2.5	5.56	16.0	0.4
	8.15		2.5			0.4
30	6.29	54.6	2.8	5.57	16.4	0.3
01		52 51.8		10 5.62	59 16.7	

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Pavonis.		α Cygni.		61' Cygni.	
	R. A.	Dec. South.	R. A.	Dec. North.	R. A.	Dec. North.
	h m	° ' "	h m	° ' "	h m	° ' "
	20 14	57 11	20 36	44 45	21 0	38 2
Jan. 1	11 ^s .36 ^s	44 ^s .7 ^s	29 ^s .05 ^s	61 ^s .8 ^s	24 ^s .48 ^s	35 ^s .4 ^s
11	11.43 0.07	42.5 2.2	29.00 0.05	59.0 2.8	24.43 0.05	33.0 2.4
21	{11.39} 0.14	{40.11} 2.4	29.00 0.00	56.1 2.9	24.43 0.00	30.5 2.5
31	11.80 0.21	37.5 2.4	29.06 0.06	52.8 3.3	24.47 0.04	27.9 2.6
Feb. 10	12.07 0.27	35.1 2.4	29.17 0.11	49.9 2.9	24.57 0.10	25.1 2.8
20	12.39 0.32	32.7 2.4	29.33 0.16	47.2 2.7	24.71 0.14	22.7 2.4
Mar. 1	12.76 0.37	30.5 2.2	29.53 0.20	44.8 2.4	24.89 0.18	20.6 2.1
11	13.18 0.42	28.4 2.1	29.78 0.25	42.9 1.9	25.10 0.21	18.8 1.8
21	13.64 0.46	26.5 1.9	30.07 0.29	41.4 1.5	25.36 0.26	17.5 1.3
31	14.13 0.49	24.8 1.7	30.39 0.32	40.5 0.9	25.65 0.29	16.7 0.8
Apr. 10	14.64 0.51	23.3 1.5	30.74 0.35	40.1 0.4	25.97 0.32	16.4 0.3
20	15.17 0.53	22.2 1.1	31.11 0.37	40.3 0.2	26.31 0.34	16.7 0.3
30	15.70 0.53	21.3 0.9	31.48 0.37	41.1 0.8	26.67 0.36	17.5 0.8
May 10	16.24 0.54	20.8 0.5	31.86 0.38	42.5 1.4	27.04 0.37	18.8 1.3
20	16.77 0.53	20.6 0.2	32.23 0.37	44.4 1.9	27.40 0.36	20.6 1.8
30	17.27 0.50	20.8 0.2	32.58 0.35	46.7 2.3	27.75 0.35	22.9 2.3
June 9	17.74 0.47	21.3 0.5	32.90 0.32	49.4 2.7	28.08 0.33	25.5 2.6
19	18.17 0.43	22.1 0.8	33.19 0.29	52.3 2.9	28.39 0.31	28.4 2.9
29	18.55 0.38	23.3 1.2	33.43 0.24	55.5 3.2	28.66 0.27	31.5 3.1
July 9	18.86 0.31	24.8 1.5	33.63 0.20	58.9 3.4	28.89 0.23	34.7 3.2
19	19.10 0.24	26.4 1.6	33.77 0.14	62.2 3.3	29.07 0.18	38.0 3.3
29	19.27 0.17	28.2 1.8	33.85 0.08	65.6 3.4	29.20 0.13	41.2 3.2
Aug. 8	19.36 0.09	30.2 2.0	33.88 0.03	68.8 3.2	29.28 0.08	44.4 3.2
18	19.37 0.01	32.2 2.0	33.85 0.03	71.9 3.1	29.31 0.03	47.5 3.1
28	19.30 0.07	34.2 2.0	33.85 0.08	74.7 2.8	29.31 0.03	50.3 2.8
Sept. 7	19.16 0.14	36.0 1.8	33.77 0.13	77.2 2.5	29.28 0.07	52.9 2.6
17	18.96 0.20	37.7 1.7	33.64 0.17	79.4 2.2	29.21 0.11	55.1 2.2
27	18.71 0.25	39.1 1.4	33.47 0.21	81.2 1.8	29.10 0.15	57.0 1.9
Oct. 7	18.43 0.28	40.2 1.1	33.26 0.24	82.6 1.4	28.95 0.18	58.5 1.5
17	18.12 0.31	40.9 0.7	33.02 0.25	83.5 0.9	28.77 0.19	59.6 1.1
27	17.81 0.31	41.2 0.3	32.77 0.26	84.0 0.5	28.58 0.21	60.0 1.1
Nov. 6	17.52 0.29	41.0 0.2	32.51 0.26	83.9 0.1	28.37 0.20	60.0 1.1
16	17.25 0.27	40.4 0.6	32.25 0.25	83.9 0.6	28.17 0.20	60.0 1.1
26	17.03 0.22	39.4 1.0	32.00 0.22	83.3 1.1	27.97 0.18	60.0 1.1
Dec. 6	16.86 0.17	38.1 1.3	31.78 0.19	82.2 1.5	27.79 0.16	60.0 1.1
16	16.76 0.10	36.4 1.7	31.59 0.16	80.7 2.0	27.63 0.14	60.0 1.1
26	16.72 0.04	34.4 2.0	31.43 0.12	78.7 2.3	27.49 0.11	60.0 1.1
36	16.76 0.04	32.3 2.1	31.31 0.07	76.4 2.7	27.39 0.08	60.0 1.1
			31.24 0.07	73.7 2.7	27.34 0.05	

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.												
Day of the Month.	ζ Cygni.			α Cephei.			β Aquarii.					
	R. A.		Dec. North.	R. A.		Dec. North.	R. A.		Dec. South.			
	h	m	°	'	h	m	°	'	h	m	°	'
	21	6	29	37	21	15	61	58	21	23	6	11
Jan. 1	46° 63'	0° 03'	75° 0'	22'	5° 22'	0° 21'	38° 3'	26'	56° 98'	0° 00'	78° 5'	0° 6'
11	46° 60'	0° 01'	72° 8'	22'	5° 01'	0° 14'	35° 7'	3° 0'	56° 98'	0° 00'	79° 1'	0° 5'
21	46° 59'	0° 04'	70° 5'	23'	4° 87'	0° 07'	32° 7'	3° 8'	57° 00'	0° 05'	79° 6'	0° 4'
31	46° 63'	0° 09'	68° 1'	25'	4° 80'	0° 02'	29° 5'	3° 5'	57° 05'	0° 10'	80° 0'	0° 3'
Feb. 10	46° 72'	0° 12'	65° 6'	21'	4° 82'	0° 11'	26° 0'	3° 2'	57° 15'	0° 12'	80° 3'	0° 1'
20	46° 84'	0° 16'	63° 5'	19'	4° 93'	0° 19'	22° 8'	2° 9'	57° 27'	0° 15'	80° 4'	0° 0'
Mar. 1	47° 00'	0° 19'	61° 6'	15'	5° 12'	0° 27'	19° 9'	2° 6'	57° 42'	0° 18'	80° 4'	0° 3'
11	47° 19'	0° 23'	60° 1'	11'	5° 39'	0° 34'	17° 3'	2° 2'	57° 60'	0° 21'	80° 1'	0° 6'
21	47° 42'	0° 26'	59° 0'	07'	5° 73'	0° 40'	15° 1'	1° 7'	57° 81'	0° 23'	79° 5'	0° 8'
31	47° 68'	0° 29'	58° 3'	01'	6° 13'	0° 45'	13° 4'	1° 1'	58° 04'	0° 26'	78° 7'	1° 9'
Apr. 10	47° 97'	0° 31'	58° 2'	03'	6° 58'	0° 49'	12° 3'	0° 5'	58° 30'	0° 29'	77° 7'	1° 2'
20	48° 28'	0° 33'	58° 5'	08'	7° 07'	0° 51'	11° 8'	0° 1'	58° 59'	0° 30'	76° 5'	1° 4'
30	48° 61'	0° 33'	59° 3'	13'	7° 58'	0° 52'	11° 9'	0° 8'	58° 89'	0° 31'	75° 1'	1° 6'
May 10	48° 94'	0° 33'	60° 6'	18'	8° 10'	0° 52'	12° 7'	1° 3'	59° 20'	0° 32'	73° 5'	1° 7'
20	49° 27'	0° 33'	62° 4'	21'	8° 62'	0° 50'	14° 0'	1° 9'	59° 52'	0° 32'	71° 8'	1° 2'
30	49° 60'	0° 31'	64° 5'	24'	9° 12'	0° 46'	15° 9'	2° 4'	59° 84'	0° 31'	70° 0'	1° 8'
June 9	49° 91'	0° 29'	66° 9'	26'	9° 58'	0° 42'	18° 3'	2° 8'	60° 15'	0° 30'	68° 2'	1° 7'
19	50° 20'	0° 26'	69° 5'	28'	10° 00'	0° 36'	21° 1'	3° 1'	60° 45'	0° 27'	66° 5'	1° 7'
29	50° 46'	0° 22'	72° 3'	30'	10° 36'	0° 30'	24° 2'	3° 4'	60° 72'	0° 25'	64° 8'	1° 6'
July 9	50° 68'	0° 18'	75° 3'	29'	10° 66'	0° 22'	27° 6'	3° 5'	60° 97'	0° 21'	63° 2'	1° 4'
19	50° 86'	0° 13'	78° 2'	29'	10° 88'	0° 14'	31° 1'	3° 7'	61° 18'	0° 17'	61° 8'	1° 2'
29	50° 99'	0° 09'	81° 1'	28'	11° 02'	0° 06'	34° 8'	3° 7'	61° 35'	0° 12'	60° 6'	1° 0'
Aug. 8	51° 08'	0° 03'	83° 9'	26'	11° 08'	0° 02'	38° 5'	3° 6'	61° 47'	0° 08'	59° 6'	0° 8'
18	51° 11'	0° 01'	86° 5'	24'	11° 06'	0° 09'	42° 1'	3° 4'	61° 55'	0° 04'	58° 8'	0° 6'
28	51° 10'	0° 05'	88° 9'	22'	10° 97'	0° 17'	45° 5'	3° 2'	61° 59'	0° 01'	58° 2'	0° 4'
Sept. 7	51° 05'	0° 10'	91° 1'	19'	10° 80'	0° 24'	48° 7'	3° 0'	61° 58'	0° 04'	57° 8'	0° 2'
17	50° 95'	0° 13'	93° 0'	16'	10° 56'	0° 30'	51° 7'	2° 7'	61° 54'	0° 08'	57° 6'	0° 0'
27	50° 82'	0° 15'	94° 6'	12'	10° 26'	0° 34'	54° 4'	2° 2'	61° 46'	0° 10'	57° 6'	0° 1'
Oct. 7	50° 67'	0° 17'	95° 8'	08'	9° 92'	0° 38'	56° 6'	1° 7'	61° 36'	0° 12'	57° 7'	0° 2'
17	50° 50'	0° 18'	96° 6'	04'	9° 54'	0° 41'	58° 3'	1° 3'	61° 24'	0° 14'	57° 9'	0° 4'
27	50° 32'	0° 19'	97° 0'	00'	9° 13'	0° 43'	59° 6'	0° 7'	61° 10'	0° 13'	58° 3'	0° 4'
Nov. 6	50° 13'	0° 17'	97° 0'	03'	8° 70'	0° 42'	60° 3'	0° 2'	60° 97'	0° 13'	58° 7'	0° 5'
16	49° 96'	0° 16'	96° 7'	08'	8° 28'	0° 41'	60° 5'	0° 4'	60° 84'	0° 11'	59° 2'	0° 5'
26	49° 80'	0° 14'	95° 9'	12'	7° 87'	0° 38'	60° 1'	1° 0'	60° 73'	0° 10'	59° 7'	0° 6'
Dec. 6	49° 66'	0° 12'	94° 7'	15'	7° 49'	0° 35'	59° 1'	1° 5'	60° 63'	0° 08'	60° 3'	0° 6'
16	49° 54'	0° 08'	93° 2'	18'	7° 14'	0° 30'	57° 6'	2° 0'	60° 55'	0° 05'	60° 9'	0° 6'
26	49° 46'	0° 06'	91° 4'	20'	6° 84'	0° 24'	55° 6'	2° 5'	60° 50'	0° 01'	61° 5'	0° 6'
36	49° 40'		89° 4'		6° 60'		53° 1'		60° 49'		62° 1'	

FIXED STARS, 1856.

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APPARENT PLACES OF THE PRINCIPAL FIXED STARS, FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	β Cephei.		ε Pegasi.		α Aquarii.	
	R. A.	Dec. North.	R. A.	Dec. North.	R. A.	Dec. South.
	h m	° ′	h m	° ′	h m	° ′
	21 26	69 55	21 37	9 12	21 58	1 0
Jan. 1	43 ^s .02 ^s	49 ^s .7 ^s	5 ^s .27 ^s	54 ^s .4 ^s	21 ^s .76 ^s	72 ^s .3 ^s
11	42 ^s .66 ^s	47 ^s .1 ^s	5 ^s .24 ^s	53 ^s .1 ^s	21 ^s .72 ^s	73 ^s .0 ^s
21	42 ^s .40 ^s	44 ^s .2 ^s	5 ^s .24 ^s	51 ^s .8 ^s	21 ^s .71 ^s	73 ^s .7 ^s
31	42 ^s .24 ^s	41 ^s .1 ^s	5 ^s .27 ^s	50 ^s .6 ^s	21 ^s .73 ^s	74 ^s .4 ^s
Feb. 10	42 ^s .19 ^s	37 ^s .5 ^s	{5 ^s .33}	{49 ^s .4}	21 ^s .78 ^s	74 ^s .9 ^s
20	42 ^s .27 ^s	34 ^s .3 ^s	5 ^s .44 ^s	48 ^s .3 ^s	21 ^s .86 ^s	75 ^s .3 ^s
Mar. 1	42 ^s .47 ^s	31 ^s .2 ^s	5 ^s .57 ^s	47 ^s .5 ^s	21 ^s .98 ^s	75 ^s .5 ^s
11	42 ^s .77 ^s	28 ^s .3 ^s	5 ^s .73 ^s	46 ^s .9 ^s	22 ^s .12 ^s	75 ^s .5 ^s
21	43 ^s .18 ^s	25 ^s .9 ^s	5 ^s .92 ^s	46 ^s .7 ^s	22 ^s .29 ^s	75 ^s .1 ^s
31	43 ^s .68 ^s	24 ^s .0 ^s	6 ^s .14 ^s	46 ^s .8 ^s	22 ^s .50 ^s	74 ^s .5 ^s
Apr. 10	44 ^s .25 ^s	22 ^s .6 ^s	6 ^s .39 ^s	47 ^s .2 ^s	22 ^s .74 ^s	73 ^s .7 ^s
20	44 ^s .87 ^s	21 ^s .8 ^s	6 ^s .67 ^s	48 ^s .0 ^s	23 ^s .00 ^s	72 ^s .5 ^s
30	45 ^s .53 ^s	21 ^s .7 ^s	6 ^s .96 ^s	49 ^s .2 ^s	23 ^s .29 ^s	71 ^s .1 ^s
May 10	46 ^s .21 ^s	22 ^s .1 ^s	7 ^s .27 ^s	50 ^s .7 ^s	23 ^s .59 ^s	69 ^s .5 ^s
20	46 ^s .89 ^s	23 ^s .2 ^s	7 ^s .59 ^s	52 ^s .4 ^s	23 ^s .91 ^s	67 ^s .8 ^s
30	47 ^s .54 ^s	24 ^s .8 ^s	7 ^s .91 ^s	54 ^s .3 ^s	24 ^s .23 ^s	65 ^s .9 ^s
June 9	48 ^s .14 ^s	27 ^s .0 ^s	8 ^s .22 ^s	56 ^s .4 ^s	24 ^s .55 ^s	63 ^s .9 ^s
19	48 ^s .69 ^s	29 ^s .6 ^s	8 ^s .52 ^s	58 ^s .6 ^s	24 ^s .85 ^s	61 ^s .9 ^s
29	49 ^s .16 ^s	32 ^s .6 ^s	8 ^s .79 ^s	60 ^s .9 ^s	25 ^s .14 ^s	60 ^s .0 ^s
July 9	49 ^s .54 ^s	35 ^s .9 ^s	9 ^s .04 ^s	63 ^s .1 ^s	25 ^s .41 ^s	58 ^s .1 ^s
19	49 ^s .83 ^s	39 ^s .4 ^s	9 ^s .25 ^s	65 ^s .2 ^s	25 ^s .64 ^s	56 ^s .3 ^s
29	50 ^s .01 ^s	43 ^s .1 ^s	9 ^s .42 ^s	67 ^s .3 ^s	25 ^s .83 ^s	54 ^s .7 ^s
Aug. 8	50 ^s .09 ^s	46 ^s .8 ^s	9 ^s .55 ^s	69 ^s .2 ^s	25 ^s .99 ^s	53 ^s .4 ^s
18	50 ^s .06 ^s	50 ^s .5 ^s	9 ^s .63 ^s	70 ^s .9 ^s	26 ^s .10 ^s	52 ^s .2 ^s
28	49 ^s .93 ^s	54 ^s .1 ^s	9 ^s .67 ^s	72 ^s .4 ^s	26 ^s .17 ^s	51 ^s .2 ^s
Sept. 7	49 ^s .69 ^s	57 ^s .6 ^s	9 ^s .67 ^s	73 ^s .7 ^s	26 ^s .19 ^s	50 ^s .5 ^s
17	49 ^s .37 ^s	60 ^s .8 ^s	9 ^s .63 ^s	74 ^s .7 ^s	26 ^s .17 ^s	50 ^s .0 ^s
27	48 ^s .97 ^s	63 ^s .7 ^s	9 ^s .56 ^s	75 ^s .5 ^s	26 ^s .12 ^s	49 ^s .7 ^s
Oct. 7	48 ^s .49 ^s	66 ^s .2 ^s	9 ^s .46 ^s	76 ^s .1 ^s	26 ^s .04 ^s	49 ^s .7 ^s
17	47 ^s .96 ^s	68 ^s .3 ^s	9 ^s .34 ^s	76 ^s .4 ^s	25 ^s .94 ^s	49 ^s .7 ^s
27	47 ^s .39 ^s	69 ^s .9 ^s	9 ^s .21 ^s	76 ^s .5 ^s	25 ^s .82 ^s	49 ^s .7 ^s
Nov. 6	46 ^s .79 ^s	70 ^s .9 ^s	9 ^s .07 ^s	76 ^s .3 ^s	25 ^s .70 ^s	49 ^s .7 ^s
16	46 ^s .17 ^s	71 ^s .4 ^s	8 ^s .94 ^s	75 ^s .9 ^s	25 ^s .58 ^s	49 ^s .7 ^s
26	45 ^s .57 ^s	71 ^s .3 ^s	8 ^s .81 ^s	75 ^s .3 ^s	25 ^s .46 ^s	49 ^s .7 ^s
Dec. 6	44 ^s .99 ^s	70 ^s .6 ^s	8 ^s .70 ^s	74 ^s .5 ^s	25 ^s .34 ^s	49 ^s .7 ^s
16	44 ^s .45 ^s	69 ^s .3 ^s	8 ^s .61 ^s	73 ^s .6 ^s	25 ^s .22 ^s	49 ^s .7 ^s
26	43 ^s .98 ^s	67 ^s .5 ^s	8 ^s .55 ^s	72 ^s .5 ^s	25 ^s .10 ^s	49 ^s .7 ^s
36	43 ^s .58 ^s	65 ^s .2 ^s	8 ^s .51 ^s	71 ^s .2 ^s	25 ^s .00 ^s	49 ^s .7 ^s

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Gruis.			ζ Pegasi.			α Piscis Australis (Fomalhaut).					
	R. A.	Dec. South.		R. A.	Dec. North.		R. A.	Dec. South.				
	h	m	°	′	h	m	°	′	h	m	°	′
	21	59	47	39	22	34	10	4	22	49	30	28
Jan. 1	6.87	0.07	39.4	39.4	15.52	0.07	47.3	47.3	40.05	0.08	79.4	0.4
11	6.80	0.03	38.0	38.0	15.45	0.05	46.2	46.2	39.97	0.06	79.0	0.7
21	6.77	0.01	36.2	36.2	15.40	0.02	45.0	45.0	39.91	0.03	78.3	1.0
31	6.78	0.06	34.2	34.2	15.38	0.01	43.9	43.9	39.88	0.00	77.3	1.3
Feb. 10	6.84	0.12	32.0	32.0	15.39	0.03	42.9	42.9	39.88	0.03	76.1	1.4
20	6.96	0.16	29.3	29.3	15.42	0.08	41.9	41.9	39.91	0.07	74.6	1.4
Mar. 1	7.12	0.20	26.8	26.8	15.50	0.10	41.0	41.0	39.98	0.11	72.7	1.4
11	7.32	0.25	24.2	24.2	15.60	0.14	40.5	40.5	40.09	0.14	70.8	1.4
21	7.57	0.29	21.6	21.6	15.74	0.18	40.2	40.2	40.23	0.18	68.8	2.1
31	7.86	0.33	19.0	19.0	15.92	0.21	40.2	40.2	40.41	0.22	66.6	2.3
Apr. 10	8.19	0.36	16.5	16.5	16.13	0.24	40.6	40.6	40.63	0.26	64.3	2.3
20	8.55	0.39	14.2	14.2	16.37	0.27	41.3	41.3	40.89	0.29	62.0	2.3
30	8.94	0.42	12.0	12.0	16.64	0.30	42.3	42.3	41.18	0.32	59.7	2.3
May 10	9.36	0.44	10.1	10.1	16.94	0.31	43.7	43.7	41.50	0.34	57.4	2.3
20	9.80	0.44	8.4	8.4	17.25	0.32	45.3	45.3	41.84	0.35	55.2	2.0
30	10.24	0.44	7.0	7.0	17.57	0.32	47.2	47.2	42.19	0.37	53.2	1.8
June 9	10.68	0.43	6.0	6.0	17.89	0.32	49.2	49.2	42.56	0.36	51.4	1.6
19	11.11	0.40	5.4	5.4	18.21	0.31	51.4	51.4	42.92	0.35	49.8	1.3
29	11.51	0.37	5.1	5.1	18.52	0.28	53.6	53.6	43.27	0.34	48.5	1.0
July 9	11.88	0.33	5.3	5.3	18.80	0.25	55.9	55.9	43.61	0.30	47.5	0.6
19	12.21	0.28	5.8	5.8	19.05	0.22	58.1	58.1	43.91	0.27	46.9	0.3
29	12.49	0.22	6.7	6.7	19.27	0.19	60.3	60.3	44.18	0.23	46.6	0.0
Aug. 8	12.71	0.15	7.9	7.9	19.46	0.14	62.3	62.3	44.41	0.19	46.6	0.4
18	12.86	0.09	9.4	9.4	19.60	0.09	64.2	64.2	44.60	0.13	47.0	0.7
28	12.95	0.03	11.0	11.0	19.69	0.06	65.8	65.8	44.73	0.09	47.7	0.9
Sept. 7	12.98	0.03	12.8	12.8	19.75	0.01	67.3	67.3	44.82	0.04	48.6	1.1
17	12.95	0.09	14.7	14.7	19.76	0.02	68.5	68.5	44.86	0.01	49.7	1.3
27	12.86	0.14	16.6	16.6	19.74	0.05	69.4	69.4	44.85	0.05	51.0	1.3
Oct. 7	12.72	0.17	18.4	18.4	19.69	0.08	70.2	70.2	44.80	0.08	52.3	1.4
17	12.55	0.20	19.9	19.9	19.61	0.10	70.7	70.7	44.72	0.11	53.7	1.3
27	12.35	0.22	21.2	21.2	19.51	0.11	70.9	70.9	44.61	0.13	55.0	1.2
Nov. 6	12.13	0.21	22.2	22.2	19.40	0.12	70.9	70.9	44.48	0.14	56.2	1.0
16	11.92	0.21	22.9	22.9	19.28	0.12	70.7	70.7	44.34	0.14	57.2	0.8
26	11.71	0.20	23.2	23.2	19.16	0.11	70.3	70.3	44.20	0.13	58.0	0.6
Dec. 6	11.51	0.16	23.0	23.0	19.05	0.10	69.7	69.7	44.07	0.13	58.6	0.3
16	11.35	0.14	22.5	22.5	18.95	0.09	69.0	69.0	43.94	0.12	58.9	0.0
26	11.21	0.09	21.6	21.6	18.86	0.08	68.1	68.1	43.82	0.09	58.9	0.4
36	11.12	0.09	20.3	20.3	18.78	0.08	67.1	67.1	43.73	0.09	58.5	0.4

FIXED STARS, 1856.

APPARENT PLACES OF THE PRINCIPAL FIXED STARS,
FOR THE UPPER TRANSIT AT GREENWICH.

Day of the Month.	α Pegasi. (Markab)				ι Piscium.				γ Cephei.			
	R. A.		Dec. North.		R. A.		Dec. North.		R. A.		Dec. North.	
	h	m	°	'	h	m	°	'	h	m	°	'
	22	57	14	25	23	32	4	50	23	33	76	49
Jan. 1	^s 34 ^a .19	^a 0 ^b .08	50 ^b .9	^b 1 ^c .1	^s 31 ^a .78	^a 0 ^b .09	42 ^b .2	^b 0 ^c .8	^s 24 ^a .14	^a 0 ^b .85	58 ^b .5	^b 0 ^c .9
11	34 ^a .11	0 ^b .07	49 ^b .8	1 ^c .2	31 ^a .69	0 ^b .08	41 ^b .4	0 ^c .8	23 ^a .29	0 ^b .78	57 ^b .6	1 ^c .4
21	34 ^a .04	0 ^b .05	48 ^b .6	1 ^c .2	31 ^a .61	0 ^b .06	40 ^b .6	0 ^c .8	22 ^a .51	0 ^b .69	56 ^b .2	2 ^c .0
31	33 ^a .99	0 ^b .01	47 ^b .4	1 ^c .2	31 ^a .55	0 ^b .04	39 ^b .8	0 ^c .7	21 ^a .82	0 ^b .58	54 ^b .2	2 ^c .4
Feb. 10	33 ^a .98	0 ^b .01	46 ^b .2	1 ^c .2	31 ^a .51	0 ^b .02	39 ^b .1	0 ^c .5	21 ^a .24	0 ^b .43	51 ^b .8	2 ^c .7
20	33 ^a .99	0 ^b .04	45 ^b .0	1 ^c .0	31 ^a .49	0 ^b .01	38 ^b .6	0 ^c .4	20 ^a .81	0 ^b .26	49 ^b .1	3 ^c .0
Mar. 1	34 ^a .03	0 ^b .08	44 ^b .0	0 ^c .9	31 ^a .50	0 ^b .05	38 ^b .2	0 ^c .2	20 ^a .55	0 ^b .09	46 ^b .1	3 ^c .1
11	34 ^a .11	0 ^b .12	43 ^b .1	0 ^c .5	31 ^a .55	0 ^b .09	38 ^b .0	0 ^c .0	20 ^a .46	0 ^b .10	43 ^b .0	3 ^c .3
21	34 ^a .23	0 ^b .16	42 ^b .6	0 ^c .2	31 ^a .64	0 ^b .12	38 ^b .0	0 ^c .3	20 ^a .56	0 ^b .29	39 ^b .7	2 ^c .9
31	34 ^a .39	0 ^b .19	42 ^b .4	0 ^c .1	31 ^a .76	0 ^b .15	38 ^b .3	0 ^c .6	20 ^a .85	0 ^b .45	36 ^b .8	2 ^c .5
Apr. 10	34 ^a .58	0 ^b .23	42 ^b .5	0 ^c .5	31 ^a .91	0 ^b .20	38 ^b .9	0 ^c .8	21 ^a .30	0 ^b .61	34 ^b .3	2 ^c .2
20	34 ^a .81	0 ^b .26	43 ^b .0	0 ^c .8	32 ^a .11	0 ^b .23	39 ^b .7	1 ^c .2	21 ^a .91	0 ^b .75	32 ^b .1	1 ^c .7
30	35 ^a .07	0 ^b .29	43 ^b .8	1 ^c .1	32 ^a .34	0 ^b .27	40 ^b .9	1 ^c .4	22 ^a .66	0 ^b .86	30 ^b .4	1 ^c .2
May 10	35 ^a .36	0 ^b .31	44 ^b .9	1 ^c .5	32 ^a .61	0 ^b .29	42 ^b .3	1 ^c .6	23 ^a .52	0 ^b .93	29 ^b .2	0 ^c .7
20	35 ^a .67	0 ^b .32	46 ^b .4	1 ^c .7	32 ^a .90	0 ^b .31	43 ^b .9	1 ^c .9	24 ^a .45	0 ^b .99	28 ^b .5	0 ^c .0
30	35 ^a .99	0 ^b .33	48 ^b .1	2 ^c .0	33 ^a .21	0 ^b .32	45 ^b .8	2 ^c .0	25 ^a .44	1 ^b .01	28 ^b .5	0 ^c .5
June 9	36 ^a .32	0 ^b .32	50 ^b .1	2 ^c .2	33 ^a .53	0 ^b .32	47 ^b .8	2 ^c .2	26 ^a .45	1 ^b .01	29 ^b .0	1 ^c .1
19	36 ^a .64	0 ^b .31	52 ^b .3	2 ^c .3	33 ^a .85	0 ^b .33	50 ^b .0	2 ^c .0	27 ^a .46	0 ^b .97	30 ^b .1	1 ^c .6
29	36 ^a .95	0 ^b .30	54 ^b .6	2 ^c .4	34 ^a .18	0 ^b .31	52 ^b .0	2 ^c .1	28 ^a .43	0 ^b .91	31 ^b .7	2 ^c .1
July 9	37 ^a .25	0 ^b .27	57 ^b .0	2 ^c .3	34 ^a .49	0 ^b .29	54 ^b .1	2 ^c .1	29 ^a .34	0 ^b .83	33 ^b .8	2 ^c .6
19	37 ^a .52	0 ^b .24	59 ^b .3	2 ^c .3	34 ^a .78	0 ^b .26	56 ^b .2	2 ^c .0	30 ^a .17	0 ^b .73	36 ^b .4	3 ^c .0
29	37 ^a .76	0 ^b .21	61 ^b .6	2 ^c .3	35 ^a .04	0 ^b .23	58 ^b .2	1 ^c .8	30 ^a .90	0 ^b .62	39 ^b .4	3 ^c .3
Aug. 8	37 ^a .97	0 ^b .16	63 ^b .8	2 ^c .1	35 ^a .27	0 ^b .20	60 ^b .0	1 ^c .6	31 ^a .52	0 ^b .49	42 ^b .7	3 ^c .5
18	38 ^a .13	0 ^b .11	65 ^b .9	1 ^c .9	35 ^a .47	0 ^b .15	61 ^b .6	1 ^c .4	32 ^a .01	0 ^b .36	46 ^b .2	3 ^c .7
28	38 ^a .24	0 ^b .08	67 ^b .8	1 ^c .8	35 ^a .62	0 ^b .12	63 ^b .0	1 ^c .2	32 ^a .37	0 ^b .21	49 ^b .9	3 ^c .8
Sept. 7	38 ^a .32	0 ^b .04	69 ^b .6	1 ^c .5	35 ^a .74	0 ^b .08	64 ^b .2	0 ^c .9	32 ^a .58	0 ^b .07	53 ^b .7	3 ^c .9
17	38 ^a .36	0 ^b .00	71 ^b .1	1 ^c .2	35 ^a .82	0 ^b .04	65 ^b .1	0 ^c .7	32 ^a .65	0 ^b .08	57 ^b .6	3 ^c .8
27	38 ^a .36	0 ^b .03	72 ^b .3	1 ^c .0	35 ^a .86	0 ^b .00	65 ^b .8	0 ^c .5	32 ^a .57	0 ^b .11	61 ^b .4	3 ^c .7
Oct. 7	38 ^a .33	0 ^b .06	73 ^b .3	0 ^c .8	35 ^a .86	0 ^b .03	66 ^b .3	0 ^c .3	32 ^a .51	0 ^b .14	65 ^b .1	3 ^c .4
17	38 ^a .27	0 ^b .09	74 ^b .1	0 ^c .5	35 ^a .83	0 ^b .04	66 ^b .6	0 ^c .0	32 ^a .45	0 ^b .17	65 ^b .5	3 ^c .7
27	38 ^a .18	0 ^b .10	74 ^b .6	0 ^c .2	35 ^a .79	0 ^b .07	66 ^b .6	0 ^c .1	32 ^a .39	0 ^b .20	65 ^b .9	3 ^c .7
Nov. 6	38 ^a .08	0 ^b .11	74 ^b .8	0 ^c .0	35 ^a .72	0 ^b .09	66 ^b .5	0 ^c .3	32 ^a .33	0 ^b .23	66 ^b .3	3 ^c .7
16	37 ^a .97	0 ^b .11	74 ^b .8	0 ^c .3	35 ^a .63	0 ^b .10	66 ^b .2	0 ^c .4	32 ^a .27	0 ^b .26	66 ^b .6	3 ^c .7
26	37 ^a .86	0 ^b .12	74 ^b .5	0 ^c .4	35 ^a .53	0 ^b .10	65 ^b .8	0 ^c .5	32 ^a .21	0 ^b .29	66 ^b .9	3 ^c .7
Dec. 6	37 ^a .74	0 ^b .11	74 ^b .1	0 ^c .7	35 ^a .43	0 ^b .10	65 ^b .3	0 ^c .6	32 ^a .15	0 ^b .32	67 ^b .1	3 ^c .7
16	37 ^a .63	0 ^b .11	73 ^b .4	0 ^c .9	35 ^a .33	0 ^b .10	64 ^b .7	0 ^c .7	32 ^a .09	0 ^b .35	67 ^b .4	3 ^c .7
26	37 ^a .52	0 ^b .09	72 ^b .5	1 ^c .0	35 ^a .23	0 ^b .09	64 ^b .0	0 ^c .8	32 ^a .03	0 ^b .38	67 ^b .7	3 ^c .7
36	37 ^a .43	0 ^b .09	71 ^b .5	1 ^c .0	35 ^a .14	0 ^b .09	63 ^b .2	0 ^c .9	32 ^a .00	0 ^b .41	68 ^b .0	3 ^c .7

FIXED STARS.

TABLE,

Showing the *Correction* to be applied to the *preceding* Apparent Places of Five Polar Stars, for the terms of Nutation involving 2ϵ .

Arg.	α Urs. Min.		γ Cephei.		σ Octantis.		δ Urs. Min.		λ Urs. Min.		Arg.		
	ϵ	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.		Dec.	ϵ
0	180	·229	+·03	+·018	+·09	-·025	-·09	-·008	-·09	-·159	-·08	90	270
1	181	·231	·02	·014	·09	·040	·09	·005	·09	·151	·08	91	271
2	182	·233	·02	·009	·09	·055	·09	-·003	·09	·143	·08	92	272
3	183	·235	·02	·005	·09	·070	·09	·000	·09	·135	·08	93	273
4	184	·237	·01	+·001	·09	·085	·09	+·003	·09	·127	·08	94	274
5	185	·238	·01	-·003	·09	·100	·09	·006	·09	·118	·08	95	275
6	186	·239	+·01	·008	·09	·115	·08	·008	·09	·109	·08	96	276
7	187	·240	·00	·012	·09	·130	·08	·011	·09	·100	·08	97	277
8	188	·240	·00	·017	·09	·144	·08	·013	·09	·091	·08	98	278
9	189	·240	·00	·021	·09	·158	·08	·016	·09	·082	·08	99	279
10	190	·240	·00	·025	·09	·172	·08	·019	·09	·073	·09	100	280
11	191	·240	-·01	·029	·09	·186	·08	·021	·09	·064	·09	101	281
12	192	·239	·01	·033	·09	·200	·08	·024	·09	·055	·09	102	282
13	193	·238	·01	·037	·08	·213	·08	·026	·08	·046	·09	103	283
14	194	·236	·02	·041	·08	·226	·08	·029	·08	·036	·09	104	284
15	195	·235	·02	·045	·08	·239	·08	·032	·08	·026	·09	105	285
16	196	·233	·02	·049	·08	·251	·07	·034	·08	·017	·09	106	286
17	197	·231	·02	·053	·08	·263	·07	·037	·08	-·008	·09	107	287
18	198	·229	·03	·056	·08	·275	·07	·039	·08	+·002	·09	108	288
19	199	·226	·03	·060	·08	·287	·07	·042	·08	·012	·09	109	289
20	200	·223	·03	·065	·08	·299	·07	·044	·07	·022	·09	110	290
21	201	·220	·03	·069	·07	·310	·07	·046	·07	·032	·09	111	291
22	202	·216	·04	·073	·07	·320	·06	·048	·07	·041	·09	112	292
23	203	·212	·04	·076	·07	·330	·06	·050	·07	·050	·09	113	293
24	204	·208	·04	·079	·07	·340	·06	·052	·07	·060	·08	114	294
25	205	·204	·04	·082	·07	·350	·06	·054	·06	·070	·08	115	295
26	206	·200	·05	·085	·06	·359	·05	·055	·06	·079	·08	116	296
27	207	·196	·05	·088	·06	·368	·05	·057	·06	·088	·08	117	297
28	208	·190	·05	·091	·06	·376	·05	·059	·06	·097	·08	118	298
29	209	·185	·05	·094	·05	·383	·04	·061	·06	·106	·08	119	299
30	210	·179	·05	·097	·05	·390	·04	·063	·05	·115	·08	120	300
31	211	·173	·06	·100	·05	·396	·04	·064	·05	·124	·08	121	301
32	212	·168	·06	·103	·05	·402	·03	·065	·05	·133	·08	122	302
33	213	·162	·06	·105	·04	·408	·03	·067	·04	·142	·07	123	303
34	214	·155	·06	·107	·04	·413	·03	·068	·04	·150	·07	124	304
35	215	·148	·06	·109	·04	·418	·03	·070	·04	·158	·07	125	305
36	216	·141	·07	·111	·04	·423	·02	·071	·04	·165	·07	126	306
37	217	·133	·07	·113	·03	·427	·02	·072	·03	·172	·06	127	307
38	218	·126	·07	·115	·03	·430	·01	·073	·03	·179	·06	128	308
39	219	·119	·07	·116	·03	·432	·01	·074	·03	·186	·06	129	309
40	220	·113	·07	·117	·03	·434	-·01	·075	·02	·193	·06	130	310
41	221	·106	·07	·118	·02	·435	·00	·076	·02	·199	·05	131	311
42	222	·099	·08	·119	·02	·436	·00	·077	·02	·206	·05	132	312
43	223	·092	·08	·120	·01	·436	·00	·077	·02	·212	·05	133	313
44	224	·084	·08	·121	·01	·436	·00	·078	·01	·218	·05	134	314
45	225	-·075	-·08	-·122	+·01	-·436	+·01	+·078	-·01	+·224	-·04	135	315

NOTE.—When the *Argument* is on the *right-hand* side of the Table, the sign of the correction must be changed.

TABLE,

Showing the Correction to be applied to the preceding Apparent Places of Five Polar Stars, for the terms of Nutation involving 2ϵ .

Arg.	α Urs. Min.		51 Cephei.		σ Octantis.		δ Urs. Min.		λ Urs. Min.		Arg.	
	ϵ	R.A. Dec.	R.A. Dec.	R.A. Dec.	R.A. Dec.	R.A. Dec.	R.A. Dec.	R.A. Dec.	ϵ			
225	-	'075 -'08	'122 +'	'01 -'436 +'	'01 +'	'078 -'	'01 +'	'224 -'	'04 135	315		
226		'067 '08	'123 '00	'435 '01	'078 -'	'01 '229	'04 136	316				
227		'058 '08	'124 '00	'433 '02	'079 '00	'234 '04	137	317				
228		'050 '08	'124 '00	'431 '02	'079 '00	'239 '04	138	318				
229		'042 '08	'124 -'	'01 '428 '02	'078 '00	'244 '04	139	319				
230		'034 '08	'124 '01	'425 '02	'078 +'	'01 '249 '03	140	320				
231		'026 '08	'123 '01	'421 '03	'078 '01	'253 '03	141	321				
232		'017 '08	'123 '02	'417 '03	'078 '01	'256 '03	142	322				
233	-	'008 '08	'122 '02	'412 '03	'077 '02	'259 '02	143	323				
234		'000 '08	'122 '02	'407 '04	'077 '02	'262 '02	144	324				
235	+	'008 '08	'121 '02	'401 '04	'076 '02	'265 '02	145	325				
236		'016 '08	'121 '03	'395 '04	'075 '03	'267 '02	146	326				
237		'025 '08	'120 '03	'389 '04	'074 '03	'269 '01	147	327				
238		'033 '08	'119 '03	'382 '05	'073 '03	'271 '01	148	328				
239		'042 '08	'117 '04	'374 '05	'072 '03	'273 -'	'01 149	329				
240		'050 '08	'115 '04	'365 '05	'071 '04	'274 '00	150	330				
241		'058 '08	'114 '04	'356 '05	'070 '04	'275 '00	151	331				
242		'066 '08	'112 '04	'347 '06	'069 '04	'275 '00	152	332				
243		'074 '08	'110 '05	'338 '06	'068 '05	'275 +'	'01 153	333				
244		'082 '08	'108 '05	'328 '06	'066 '05	'275 '01	154	334				
245		'090 '08	'106 '05	'318 '06	'064 '05	'275 '01	155	335				
246		'097 '07	'102 '06	'307 '07	'062 '05	'274 '02	156	336				
247		'105 '07	'100 '06	'296 '07	'061 '06	'272 '02	157	337				
248		'112 '07	'098 '06	'284 '07	'060 '06	'270 '02	158	338				
249		'120 '07	'095 '06	'272 '07	'058 '06	'268 '02	159	339				
250		'127 '07	'093 '06	'261 '07	'056 '06	'266 '03	160	340				
251		'134 '07	'090 '07	'249 '08	'054 '06	'263 '03	161	341				
252		'141 '07	'087 '07	'237 '08	'052 '07	'260 '03	162	342				
253		'148 '06	'084 '07	'224 '08	'050 '07	'257 '04	163	343				
254		'154 '06	'080 '07	'211 '08	'048 '07	'254 '04	164	344				
255		'161 '06	'077 '07	'197 '08	'046 '07	'250 '04	165	345				
256		'167 '06	'074 '08	'183 '09	'045 '08	'246 '04	166	346				
257		'173 '06	'070 '08	'169 '09	'043 '08	'242 '05	167	347				
258		'178 '05	'066 '08	'155 '09	'040 '08	'237 '05	168	348				
259		'184 '05	'062 '08	'141 '09	'037 '08	'232 '05	169	349				
260		'189 '05	'059 '08	'126 '09	'034 '08	'227 '06	170	350				
261		'194 '05	'055 '08	'111 '09	'031 '08	'221 '06	171	351				
262		'199 '04	'050 '08	'096 '09	'030 '08	'215 '06	172	352				
263		'204 '04	'047 '09	'081 '09	'027 '08	'209 '06	173	353				
264		'207 '04	'043 '09	'066 '09	'024 '09	'203 '06						
265		'212 '04	'039 '09	'051 '09	'022 '09	'196 '06						
266		'216 '03	'035 '09	'036 '09	'020 '09	'189 '06						
267		'220 '03	'030 '09	'021 '09	'017 '09	'181 '06						
268		'223 '03	'026 '09	'006 '09	'013 '09	'173 '06						
269		'226 '03	'022 '09	+ '009 '09	'011 '09	'165 '06						
270	+	'229 -'	'018 -'	'09 +'	'025 +'	'09 +'	'008 +'					

NOTE.—When the Argument is on the right-hand side of the Table correction must be changed.

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856.			h m s	s	s	o ' "	"
Jan. 1	α Virginis -	1	13 17 35.84			S. 10 24	
	ζ Virginis -	4	13 27 20.80			N. 0 9	
	Moon II.L.	- -	13 33 26.54	113.77	62.69	S. 9 3 42.8	- 840.6
	Moon II.U.	23.8	13 56 32.07	117.29	63.66	11 49 52.9	819.7
	κ Virginis -	4	14 5 12.12			9 36	
	λ Virginis -	4	14 11 18.30			S. 12 42	
2	κ Virginis -	4	14 5 12.16			S. 9 36	
	λ Virginis -	4	14 11 18.33			12 42	
	Moon III.L.	- -	14 20 24.67	121.62	64.83	14 30 58.6	- 789.6
	Moon II.U.	24.8	14 45 13.90	126.72	66.19	17 4 59.7	748.6
	ζ Libræ - -	4	15 20 7.02			16 13	
	γ Libræ - -	4½	15 27 27.01			S. 14 18	
3	Moon III.L.	- -	15 11 8.56	132.50	67.70	S. 19 29 35.5	- 695.1
	Moon II.U.	25.9	15 38 16.07	138.83	69.31	21 42 5.3	627.3
4	Moon II.L.	- -	16 6 41.52	145.44	70.97	S. 23 39 27.4	- 543.6
	Moon II.U.	26.9	16 36 26.36	152.00	72.58	25 18 24.5	443.0
5	Moon III.L.	- -	17 7 27.36	158.05	74.05	S. 26 35 32.9	- 325.6
	Moon II.U.	27.9	17 39 35.66	163.12	75.25	27 27 37.2	192.7
6	Moon III.L.	- -	18 12 36.39	166.71	76.10	S. 27 51 48.9	- 47.5
	Moon II.U.	29.0	18 46 9.62	168.49	76.52	27 46 6.8	+ 105.3
7	Moon I. L.	- -	19 17 19.47	168.35	76.48	S. 27 9 34.2	+ 259.9
8	Moon I. U.	0.5	19 50 49.61	166.38	76.01	S. 26 2 27.5	+ 409.9
	Moon I. L.	- -	20 23 46.38	162.86	75.18	24 26 17.5	549.6
9	Moon I. U.	1.6	20 55 54.04	158.28	74.09	S. 22 23 35.9	+ 674.5
	Moon I. L.	- -	21 27 2.84	153.14	72.85	19 57 39.9	781.6
10	Moon I. U.	2.6	21 57 8.91	147.90	71.58	S. 17 12 13.1	+ 869.5
	Moon I. L.	- -	22 26 13.58	142.96	70.35	14 11 8.8	938.0
11	Moon I. U.	3.6	22 54 22.09	138.58	69.27	S. 10 58 16.9	+ 987.6
	Moon I. L.	- -	23 21 42.41	134.95	68.36	S. 7 37 16.9	1019.5
12	ι Piscium *	4½	23 32 31.68			N. 4 51	
	20 Piscium -	5½	23 40 31.37			S. 3 34	
	Moon I. U.	4.7	23 48 24.23	132.17	67.66	4 11 33.3	+ 1035.2
	Moon I. L.	- -	0 14 38.12	130.30	67.19	0 44 13.2	1035.
	30 Piscium -	4½	23 54 33.66			6 49	
	33 Piscium -	5	23 57 57.05			S. 6 31	
13	30 Piscium -	4½	23 54 33.65			S. 6 49	
	33 Piscium -	5	23 57 57.04			S. 6 31	
	Moon I. U.	5.7	0 40 34.96	129.33	66.95	N. 2 41 47	

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	
Jan. 13	Moon I. L.	- -	1 6 25.55	129.25	66.94	N. 6 3 54.7	+996.3
	♌ Piscium *	4	0 55 27.84			7 7	
	♌ Piscium *	5	1 0 56.71			N. 4 53	
14	♌ Piscium *	4	0 55 27.83			N. 7 7	
	♌ Piscium *	5	1 0 56.70			4 53	
	Moon I. U.	6.7	1 32 20.12	129.99	67.15	9 19 30.6	+957.8
	Moon I. L.	- -	1 58 28.22	131.48	67.54	12 26 14.1	907.5
	♌ Ceti - - *	5	2 5 22.04			8 10	
	♌ Arietis *	5½	2 17 6.07			N. 9 57	
15	♌ Ceti - - *	5	2 5 22.03			N. 8 10	
	♌ Arietis *	5½	2 17 6.05			9 57	
	Moon I. U.	7.8	2 24 58.28	133.63	68.10	15 21 45.3	+845.8
	Moon I. L.	- -	2 51 57.15	136.26	68.77	18 3 48.0	772.8
	♌ Arietis -	5	2 50 59.08			20 46	
	♌ Arietis -	4	3 3 24.15			N. 19 11	
16	♌ Arietis -	5	2 50 59.07			N. 20 46	
	♌ Arietis -	4	3 3 24.14			19 11	
	Moon I. U.	8.8	3 19 29.70	139.20	69.51	20 30 9.7	+689.0
	Moon I. L.	- -	3 47 38.32	142.23	70.26	22 38 42.0	594.7
	♌ Tauri - -	4½	3 36 20.21			23 39	
	♌ Tauri - -	3	3 38 56.09			N. 23 39	
17	♌ Tauri - -	4½	3 36 20.20			N. 23 39	
	♌ Tauri - -	3	3 38 56.08			23 39	
	Moon I. U.	9.8	4 16 22.41	145.06	70.95	24 27 25.7	+491.1
	Moon I. L.	- -	4 45 37.99	147.43	71.50	25 54 35.7	379.4
	♌ Tauri - -	4½	4 54 30.15			21 23	
	♌ Tauri - -	5½	4 59 17.98			N. 20 13	
18	♌ Tauri - -	4½	4 54 30.17			N. 21 23	
	♌ Tauri - -	5½	4 59 17.97			20 13	
	Moon I. U.	10.9	5 15 17.81	149.06	71.88	26 58 46.6	+261.6
	Moon I. L.	- -	5 45 11.56	149.72	72.00	27 39 1.0	140.4
	♌ Tauri - -	4½	5 44 17.60			27 34	
	♌ Aurigæ -	4	6 6 13.15			N. 29 33	
19	♌ Tauri - -	4½	5 44 17.60			N. 27 34	
	♌ Aurigæ -	4	6 6 13.15			29 33	
	Moon I. U.	11.9	6 15 6.75	149.28	71.85	27 54 53.5	+ 18.5
	Moon I. L.	- -	6 44 49.90	147.72	71.43	27 46 35.7	-100.9
	♌ Tauri - -	3	6 35 5.43			25 16	
	♌ Tauri - -	3	6 55 35.10			N. 20 47	
	♌ Tauri - -	3	15 5.43			N. 25 16	
	♌ Tauri - -	3	35.11			20 47	
	♌ Tauri - -	3	9.97	145.13	70.74	27 14 53.8	-215.0
	♌ Tauri - -	3	49	141.67	69.85	N. 26 21 6.1	-321.5

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's De in 1 ho of Lon
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
1856.			h m s			o ' "		
Jan. 20	α Geminor.	1½	7 25 25.70			N. 32 12		
	β Geminor.	1½	7 36 31.20			28 22		
21	α Geminor.	1½	7 25 25.71			N. 32 12		
	β Geminor.	1½	7 36 31.21			28 22		
	Moon II. U.	14.0	8 10 45.65	137.61	68.79	25 6 55.2	-418.	
	θ Cancrī - -	5½	8 23 24.04			18 35		
	γ Cancrī - -	4½	8 34 58.06			N. 21 59		
22	θ Cancrī - -	5½	8 23 24.05			N. 18 35		
	γ Cancrī - -	4½	8 34 58.07			21 59		
	Moon II. L.	- -	8 40 5.96	133.00	67.64	23 34 20.6	-505.	
	Moon II. U.	15.0	9 6 14.86	128.49	66.46	21 45 31.9	581.	
	λ Leonis - -	4½	9 23 31.12			23 36		
	ϵ Leonis - -	3	9 37 41.45			N. 24 26		
23	λ Leonis - -	4½	9 23 31.14			N. 23 36		
	ϵ Leonis - -	3	9 37 41.47			24 26		
	Moon II. L.	- -	9 31 30.25	124.12	65.29	19 42 38.7	-646.	
	Moon II. U.	16.1	9 55 54.81	120.05	64.21	17 27 47.7	700.	
	B. A. C. 3579	6	10 21 7.57			15 5		
	ρ Leonis - *	4	10 25 14.56			N. 10 3		
24	B. A. C. 3579	6	10 21 7.61			N. 15 5		
	ρ Leonis - *	4	10 25 14.58			10 3		
	Moon II. L.	- -	10 19 33.05	116.41	63.22	15 2 58.0	-745.	
	Moon II. U.	17.1	10 42 30.79	113.31	62.37	12 30 1.1	782.	
	χ Leonis - *	4½	10 57 36.06			8 7		
	σ Leonis - *	4	11 13 43.34			N. 6 49		
25	χ Leonis - *	4½	10 57 36.08			N. 8 7		
	σ Leonis - *	4	11 13 43.37			6 49		
	Moon II. L.	- -	11 4 54.82	110.80	61.70	9 50 37.3	-810.	
	Moon II. U.	18.1	11 26 52.58	108.93	61.19	7 6 18.1	831.	
	ν Virginis *	4½	11 38 28.21			7 20		
	β Virginis -	3½	11 43 12.30			N. 2 35		
26	ν Virginis *	4½	11 38 28.23			N. 7 20		
	β Virginis -	3½	11 43 12.32			2 35		
	Moon II. L.	- -	11 48 31.93	107.74	60.87	4 18 27.9	-845.	
	Moon II. U.	19.2	12 10 1.02	107.23	60.76	N. 1 28 24.5	853.	
	γ Virginis -	4	12 34 22.27			S. 0 40		
	ζ Virginis -	6	12 45 49.21			S. 2 46		
27	γ Virginis -	4	12 34 22.30			S. 0 40		
	ζ Virginis -	6	12 45 49.24			2 46		
	Moon II. L.	- -	12 31 28.32	107.44	60.85	1 22 38.3	-855.	
	Moon II. U.	20.2	12 53 2.48	108.38	61.14	4 13 28.4	-851.	
	α Virginis -	1	13 17 36.71			S. 10 25		
	ζ Virginis -	4	13 27 21.66			N. 0 9		

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension <i>in Time.</i>	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	"
Jan. 28	α Virginis -	1	13 17 36.74			S. 10 25	
	ζ Virginis -	4	13 27 21.69			N. 0 9	
	Moon II. L.	- -	13 14 52.42	110.07	61.65	S. 7 2 52.3	-841.3
	Moon II. U.	21.2	13 37 7.26	112.53	62.37	9 49 32.2	824.2
	κ Virginis -	4	14 5 13.04			9 36	
	λ Virginis -	4	14 11 19.22			S. 12 42	
29	κ Virginis -	4	14 5 13.07			S. 9 36	
	λ Virginis -	4	14 11 19.25			12 42	
	Moon II. L.	- -	13 59 56.32	115.78	63.30	12 32 3.1	-799.7
	Moon II. U.	22.2	14 23 29.00	119.80	64.43	15 8 49.8	766.6
	α ^s Libræ - -	2½	14 42 54.72			15 26	
	20 Libræ - -	3½	14 55 38.53			S. 24 43	
30	α ^s Libræ - -	2½	14 42 54.76			S. 15 26	
	20 Libræ - -	3½	14 55 38.57			24 43	
	Moon II. L.	- -	14 47 54.49	124.58	65.74	17 38 2.8	-723.8
	Moon II. U.	23.3	15 13 21.53	130.04	67.20	19 57 36.6	669.8
	π Scorpil -	3½	15 50 7.98			25 42	
	β ⁱ Scorpil -	2	15 57 3.36			S. 19 24	
31	π Scorpil -	3½	15 50 8.02			S. 25 42	
	β ⁱ Scorpil -	2	15 57 3.39			19 24	
	Moon II. L.	- -	15 39 57.70	136.08	68.78	22 5 6.4	-602.9
	Moon II. U.	24.3	16 7 48.70	142.48	70.42	23 57 49.0	521.7
	α Scorpil -	1½	16 20 34.10			26 6	
	τ Scorpil -	3½	16 26 54.48			S. 27 55	
Feb. 1	α Scorpil -	1½	16 20 34.14			S. 26 6	
	τ Scorpil -	3½	16 26 54.52			27 55	
	Moon II. L.	- -	16 36 57.30	148.95	72.03	25 32 44.6	-424.9
	Moon II. U.	25.3	17 7 22.19	155.12	73.55	26 46 43.3	312.2
	d Ophiuchi -	4	17 18 8.47			29 44	
	c ^s Ophiuchi -	5	17 22 36.83			S. 23 51	
2	Moon II. L.	- -	17 38 57.04	160.53	74.84	S. 27 36 36.6	-184.2
	Moon II. U.	26.4	18 11 29.94	164.72	75.83	27 59 32.4	-43.3
3	Moon II. L.	- -	18 44 43.94	167.7		27 53 13.9	+107.4
	Moon II. U.	27.4	19 18 18.37	168		27 16 18.0	262.2
4	Moon II. L.	- -	19 51 51.25			26 8 28.1	15.2
	Moon II. U.	28.5	20 25 2.10			24 30 42.1	60.7
5	Moon II. L.	- -	20 57 34.2			2 25	2
6	Moon I. U.	0.1	21 26 48			54	
	Moon I. L.	- -	21 57 37			2	
7	Moon I. U.	1.1	22 27				

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856. Feb. 7	Moon I. L.	- -	h m s 22 56 29.45	^s 142.94	^a 70.34	S. 10 32 11.3	+ 1034.2
8	Moon I. U.	2.2	23 24 43.00	139.45	69.47	S. 7 1 38.3	+ 1067.9
	Moon I. L.	- -	23 52 19.23	136.73	68.81	S. 3 26 18.4	1082.3
9	Moon I. U.	3.2	0 19 27.97	134.87	68.36	N. 0 10 4.6	+ 1078.7
	Moon I. L.	- -	0 46 19.54	133.87	68.14	3 44 3.9	1058.6
10	♃ Piscium *	5	0 41 11.88			N. 6 48	
	♌ Piscium *	4	0 55 27.54			7 7	
	Moon I. U.	4.2	1 13 4.14	133.70	68.12	7 12 29.3	+ 1023.3
	Moon I. L.	- -	1 39 51.47	134.31	68.32	10 32 26.7	974.1
	♍ Piscium -	4	1 23 46.17			14 36	
	♎ Piscium *	5	1 29 27.43			N. 11 24	
11	♏ Piscium -	4	1 23 46.16			N. 14 36	
	♐ Piscium *	5	1 29 27.42			11 24	
	Moon I. U.	5.3	2 6 50.26	135.60	68.68	13 41 16.1	+ 912.1
	Moon I. L.	- -	2 34 7.99	137.44	69.19	16 36 29.5	838.2
	♑ Arietis -	5	2 41 15.33			16 52	
	♒ Arietis -	5	2 50 58.71			N. 20 46	
12	♑ Arietis -	5	2 41 15.31			N. 16 52	
	♒ Arietis -	5	2 50 58.69			20 46	
	Moon I. U.	6.3	3 1 50.33	139.67	69.77	19 15 50.4	+ 753.5
	Moon I. L.	- -	3 30 0.75	142.08	70.40	21 37 13.4	658.8
	♓ Tauri - -	4½	3 36 19.85			23 39	
	♈ Tauri - -	3	3 38 55.73			N. 23 39	
13	♓ Tauri - -	4½	3 36 19.83			N. 23 39	
	♈ Tauri - -	3	3 38 55.71			23 39	
	Moon I. U.	7.3	3 58 40.12	144.45	71.00	23 38 45.6	+ 555.2
	Moon I. L.	- -	4 27 46.37	146.52	71.50	25 18 48.8	444.2
	♄ Tauri - -	4½	4 15 48.12			17 6	
	♅ Tauri - -	3½	4 20 12.93			N. 18 51	
14	♄ Tauri - -	4½	4 15 48.10			N. 17 6	
	♅ Tauri - -	3½	4 20 12.92			18 51	
	Moon I. U.	8.4	4 57 14.32	148.03	71.87	26 36 4.7	+ 327.6
	Moon I. L.	- -	5 26 56.03	148.78	72.02	27 29 38.2	207.6
	♆ Tauri - -	2	5 17 12.05			28 29	
	♇ Tauri - -	3½	5 29 3.08			N. 21 3	
15	♆ Tauri - -	2	5 17 12.04			N. 28 29	
	♇ Tauri - -	3½	5 29 3.06			21 3	
	Moon I. U.	9.4	5 56 41.25	148.59	71.94	27 59 2.0	+ 86.4
	Moon I. L.	- -	6 26 18.37	147.43	71.60	28 4 18.7	- 33.2
	♈ Geminor.	3	6 14 15.77			22 35	
	♉ Geminor.	3	6 35 5.33			N. 25 16	

MOON-CULMINATING STARS.

449

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
856. Feb. 16	μ Geminor.	3	h m s	s	s	° ' "	"
	ε Geminor.	3	6 14 15.75			N.22 35	
	Moon I. U.	10.4	6 35 5.32			25 16	
	Moon I. L.	- -	6 55 35.63	145.30	71.02	27 46 2.4	-148.7
	δ Geminor.	3½	7 11 32.34			27 5 15.0	258.0
	ι Geminor.	4	7 24 22.15	14.33	70.23	22 15	
			7 16 47.98			N.28 5	
17	δ Geminor.	3½	7 11 32.34			N.22 15	
	ι Geminor.	4	7 16 47.97			28 5	
	Moon I. U.	11.5	7 52 29.01	138.72	69.25	26 3 22.6	-359.3
	Moon I. L.	- -	8 19 49.70	134.68	68.17	24 42 9.1	451.3
	ψ ² Cancrī - -	4	8 1 47.84			25 56	
	γ Cancrī - -	4½	8 34 58.25			N.21 59	
18	ψ ² Cancrī - -	4	8 1 47.84			N.25 56	
	γ Cancrī - -	4½	8 34 58.25			21 59	
	Moon I. U.	12.5	8 46 20.45	130.43	67.02	23 3 30.2	-533.5
	Moon I. L.	- -	9 12 0.17	126.20	65.86	21 9 26.6	605.4
	ξ Cancrī - -	5½	9 1 5.93			22 38	
	λ Leonis - -	4½	9 23 31.44			N.23 36	
19	ξ Cancrī - -	5½	9 1 5.93			N.22 38	
	λ Leonis - -	4½	9 23 31.45			23 36	
	Moon I. U.	13.6	9 36 50.11	122.16	64.75	19 1 59.7	-667.4
	Moon I. L.	- -	10 0 53.34	118.45	63.71	16 43 8.2	719.6
	α Leonis - *	1½	10 0 43.34			12 40	
	γ Leonis - -	2	10 12 3.27			N.20 34	
20	α Leonis - *	1½	10 0 43.35			N.12 40	
	γ Leonis - -	2	10 12 3.28			20 34	
	Moon II. U.	14.6	10 26 20.05	115.02	62.80	14 14 44.7	-762.8
	ε Leonis - *	5½	10 53 18.20			6 52	
	χ Leonis - *	4½	10 57 36.57			N. 8 7	
21	ε Leonis - *	5½	10 53 18.21			N. 6 52	
	χ Leonis - *	4½	10 57 36.58			8 7	
	Moon II. L.	- -	10 49 3.14	112.26	62.02	11 38 35.5	-797.4
	Moon II. U.	15.6	11 11 16.45	110.06	61.40	8 56 19.7	824.0
	ν Virginis *	4½	11 38 28.80				
	β Virginis -	3½	11 43 12.89				
22	ν Virginis *	4½	11 38 28.81				
	β Virginis -	3½	11 43 12.91				
	Moon II. L.	- -	11 33 6.99	108.46			843.0
	Moon II. U.	16.7	11 54 42.00	107.4			855.1
	ι ⁰ Virginis -	6	12 2 19.73				
η Virginis -	3½	12 12 33.43					
23	ι ⁰ Virginis -	6	12 2 19.75				
	η Virginis -	3½	12 12 33.44				

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	'
Feb. 23	Moon II.L.	- -	12 16 9.09	107.14	60.62	N. 0 27 55.8	-860.4
	Moon II.U.	17.7	12 37 36.00	107.45	60.74	S. 2 24 7.0	859.0
	ψ Virginis -	5	12 46 53.05			8 45	
	θ Virginis -	4½	13 2 30.76			S. 4 46	
24	ψ Virginis -	5	12 46 53.07			S. 8 45	
	θ Virginis -	4½	13 2 30.79			4 46	
	Moon II.L.	- -	12 59 10.71	108.44	61.06	5 15 14.4	-851.1
	Moon II.U.	18.7	13 21 1.33	110.11	61.57	8 4 6.6	856.5
	m Virginis -	5½	13 34 4.27			7 58	
	86 Virginis -	6	13 38 17.01			S. 11 42	
25	m Virginis -	5½	13 34 4.29			S. 7 58	
	86 Virginis -	6	13 38 17.03			11 42	
	Moon II.L.	- -	13 43 16.12	112.48	62.28	10 49 20.8	-814.7
	Moon II.U.	19.8	14 6 3.47	115.54	63.18	13 29 27.5	785.2
	5 Libræ - -	6	14 38 2.20			14 51	
	α Libræ - -	2½	14 42 55.59			S. 15 26	
26	5 Libræ - -	6	14 38 2.23			S. 14 51	
	α Libræ - -	2½	14 42 55.61			15 26	
	Moon II.L.	- -	14 29 31.69	119.28	64.26	16 2 51.3	-747.3
	Moon II.U.	20.8	14 53 48.82	123.68	65.50	18 27 44.4	700.0
	ζ Libræ - -	4	15 20 8.84			16 13	
	η Libræ - -	4½	15 35 58.96			S. 15 13	
27	ζ Libræ - -	4	15 20 8.87			S. 16 13	
	η Libræ - -	4½	15 35 59.00			15 13	
	Moon II.L.	- -	15 19 2.35	128.67	66.86	20 42 8.3	-642.2
	Moon II.U.	21.8	15 45 18.66	134.12	68.34	22 43 49.6	572.7
	α Scorpïi -	1½	16 20 35.06			26 6	
	τ Scorpïi -	3½	16 26 55.45			S. 27 55	
28	α Scorpïi -	1½	16 20 35.09			S. 26 6	
	τ Scorpïi -	3½	16 26 55.48			27 55	
	Moon II.L.	- -	16 12 42.34	139.86	69.85	24 30 22.5	-490.6
	Moon II.U.	22.9	16 41 15.46	145.65	71.34	25 59 9.2	394.9
	θ Ophiuchi -	3½	17 13 9.93			24 51	
	d Ophiuchi -	4	17 18 9.42			S. 29 44	
29	θ Ophiuchi -	3½	17 13 9.96			S. 24 51	
	d Ophiuchi -	4	17 18 9.46			29 44	
	Moon II.L.	- -	17 10 56.66	151.15	72.73	27 7 25.6	-285.5
	Moon II.U.	23.9	17 41 40.49	156.02	73.93	27 52 29.6	163.0
	μ Sagittarii	4	18 5 8.65			21 6	
	δ Sagittarii	3½	18 11 46.01			S. 29 53	
Mar. 1	μ Sagittarii	4	18 5 8.68			S. 21 6	
	δ Sagittarii	3½	18 11 46.04			29 53	
	Moon II.L.	- -	18 13 17.07	159.88	74.87	S. 28 11 52.8	- 29.1

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.	
856. Mar. 1	Moon II. U.	24.9	h m s					
	♆ Sagittarii	3½	18 45 32.49	162.44	75.47	S. 28 3 34.0	+ 113.4	
	♄ Sagittarii	4	18 57 56.18			S. 27 53		
2	Moon II. L.	- -	19 18 9.81	163.52	75.71	S. 27 26 13.1	+ 260.5	
	Moon II. U.	26.0	19 50 51.08	163.11	75.58	26 19 21.3	407.7	
3	Moon II. L.	- -	20 23 19.14	161.36	75.13	S. 24 43 29.1	+ 549.8	
	Moon II. U.	27.0	20 55 19.72	158.59	74.42	22 40 3.7	682.4	
4	Moon II. L.	- -	21 26 42.66	155.16	73.55	S. 20 11 24.1	+ 801.5	
	Moon II. U.	28.0	21 57 22.43	151.46	72.61	17 20 33.0	903.9	
5	Moon II. L.	- -	22 27 18.01	147.85	71.68	S. 14 11 4.0	+ 987.6	
	Moon II. U.	29.1	22 56 32.06	144.58	70.85	10 46 51.3	1051.1	
6	Moon I. L.	- -	23 22 49.92	141.99	70.15	S. 7 12 1.3	+ 1093.8	
7	Moon I. U.	0.7	23 51 0.93	139.97	69.64	S. 3 30 42.6	+ 1115.9	
	Moon I. L.	- -	0 18 52.20	138.71	69.34	N. 0 12 58.5	1117.7	
8	Moon I. U.	1.7	0 46 33.10	138.24	69.24	N. 3 55 4.0	+ 1100.1	
	Moon I. L.	- -	1 14 13.02	138.54	69.35	7 31 47.4	1064.2	
9	Moon I. U.	2.7	1 42 0.76	139.53	69.64	N. 10 59 35.9	+ 1011.2	
	Moon I. L.	- -	2 10 4.04	141.11	70.09	14 15 12.7	942.5	
10	Moon I. U.	3.8	2 38 29.01	143.12	70.64	N. 17 15 37.9	+ 859.5	
	Moon I. L.	- -	3 7 19.71	145.36	71.24	19 58 9.7	763.8	
	♈ Arietis -	4	3 3 23.37			19 11		
	♈ Arietis -	5	3 6 37.08			N. 20 30		
11	♈ Arietis -	4	3 3 23.36			N. 19 11		
	♈ Arietis -	5	3 6 37.07			20 30		
	Moon I. U.	4.8	3 36 37.58	147.60	71.84	22 20 26.6	+ 657.3	
	Moon I. L.	- -	4 6 21.07	149.58	72.36	24 20 29.6	541.9	
	♉ Tauri - -	4½	4 15 47.68			17 6		
12	♉ Tauri - -	3½	4 20 12.49			N. 18 51		
	♉ Tauri - -	4½	4 15 47.67			N. 17 6		
	♉ Tauri - -	3½	4 20 12.47			18 51		
	Moon I. U.	5.8	4 36 25.44	151.04	72.74	25 56 45.9	+ 745.9	
	Moon I. L.	- -	5 6 42.99	151.74	72.92	27 8 11.7		
	♊ Tauri - -	2	5 17 11.59			28 29		
13	♊ Tauri - -	3½	5 29 2.63			N. 21 3		
	♊ Tauri - -	2	5 17 11.57			N. 28 29		
	Moon I. U.	6.9	5 37 3.52	151.51	72.86	21 3		
Moon I. L.	- -	6 7 15.38	150.29	72.54	27 54			
					N. 28 15			

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of ☉'s Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.		
1856.								
Mar. 13	γ Geminor.	4	^h 6 ^m 6 ^s 11'50			N.22 33		
	μ Geminor.	3	6 14 15'37			22 35		
14	γ Geminor.	4	6 6 11'49			N.22 33		
	μ Geminor.	3	6 14 15'35			22 35		
	Moon I. U.	7·9	6 37 6'57	148'08	71'96	28 11 3'4	80'0	
	Moon I. L.	- -	7 6 25'79	145'00	71'16	27 43 26'7	194'8	
	δ Geminor.	3½	7 11 32'02			22 15		
	ι Geminor.	4	7 16 47'64			N.28 5		
15	δ Geminor.	3½	7 11 32'01			N.22 15		
	ι Geminor.	4	7 16 47'63			28 5		
	Moon I. U.	8·9	7 35 3'78	141'24	70'16	26 53 40'1	301'4	
	Moon I. L.	- -	8 2 53'74	137'03	69'04	25 43 29'9	398'6	
	φ Geminor.	5	7 44 41'79			27 8		
	ψ Cancrī - -	4	8 1 47'60			N.25 56		
16	φ Geminor.	5	7 44 41'78			N.27 8		
	ψ Cancrī - -	4	8 1 47'59			25 56		
	Moon I. U.	10·0	8 29 51'70	132'61	67'84	24 14 52'5	485'9	
	Moon I. L.	- -	8 55 56'37	128'19	66'62	22 29 48'4	563'1	
	δ Cancrī - -	4½	8 36 31'04			18 41		
	ε Cancrī - -	5½	9 1 5'82			N.22 38		
17	δ Cancrī - -	4½	8 36 31'03			N.18 41		
	ε Cancrī - -	5½	9 1 5'81			22 38		
	Moon I. U.	11'0	9 21 8'90	123'95	65'44	20 30 18'4	630'3	
	Moon I. L.	- -	9 45 32'31	120'03	64'33	18 18 18'8	688'1	
	α Leonis - -	3	9 37 41'79			24 26		
	γ Leonis - -	3½	9 59 30'08			N.17 28		
18	α Leonis - -	3	9 37 41'78			N.24 26		
	γ Leonis - -	3½	9 59 30'08			17 28		
	Moon I. U.	12'0	10 9 11'14	116'53	63'33	15 55 39'6	736'9	
	Moon I. L.	- -	10 32 11'01	113'54	62'46	13 24 6'1	777'3	
	44 Leonis - *	6	10 17 41'14			9 31		
	ρ Leonis - *	4	10 25 15'10			N.10 3		
19	44 Leonis - *	6	10 17 41'14			N. 9 31		
	ρ Leonis - *	4	10 25 15'10			10 3		
	Moon I. U.	13'1	10 54 38'25	111'10	61'74	10 45 15'8	809'8	
	Moon I. L.	- -	11 16 39'66	109'24	61'20	8 0 41'7	834'7	
	η Leonis - -	5½	11 8 21'36			14 6		
	ι Leonis - *	4	11 16 26'24			N.11 19		
20	η Leonis - -	5½	11 8 21'36			N.14 6		
	ι Leonis - *	4	11 16 26'24			11 19		
	Moon I. U.	14'1	11 38 22'31	107'98	60'82	5 11 51'8	852'4	
	Moon I. L.	- -	11 59 53'56	107'33	60'63	2 20 11'3	863'2	
	β Virginis *	5½	11 52 35'89			N. 4 27		

MOON-CULMINATING STARS.

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No.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
56.			h m s	s	s	° ' "	"
20	γ Virginis -	3½	12 12 33.78			N. 0 8	
21	b Virginis *	5½	11 52 35.90			N. 4 27	
	γ Virginis -	3½	12 12 33.78			N. 0 8	
	Moon II. U.	15.1	12 23 22.04	107.33	60.64	S. 0 32	56.5 —867.0
	γ Virginis -	4	12 34 23.38			0 40	
	ψ Virginis -	5	12 46 53.48			S. 8 45	
22	γ Virginis -	4	12 34 23.39			S. 0 40	
	ψ Virginis -	5	12 46 53.49			8 45	
	Moon II. L.	- -	12 44 53.15	107.96	60.83	3 26	8.9 —863.9
	Moon II. U.	16.2	13 6 35.71	109.24	61.21	6 18	0.8 853.6
	α Virginis -	1	13 17 37.99			10 25	
	m Virginis -	5½	13 34 4.81			S. 7 59	
23	α Virginis -	1	13 17 38.01			S. 10 25	
	m Virginis -	5½	13 34 4.82			7 59	
	Moon II. L.	- -	13 28 37.40	111.15	61.77	9 7	5.8 —835.9
	Moon II. U.	17.2	13 51 5.82	113.69	62.52	11 51	52.0 810.4
	κ Virginis -	4	14 5 14.48			9 36	
	λ Virginis -	4	14 11 20.70			S. 12 42	
24	κ Virginis -	4	14 5 14.50			S. 9 36	
	λ Virginis -	4	14 11 20.72			12 42	
	Moon II. L.	- -	14 14 8.49	116.86	63.44	14 30	42.1 —776.5
	Moon II. U.	18.2	14 37 52.72	120.61	64.51	17 1	50.9 733.4
20	Librae - -	3½	14 55 40.24			24 43	
5	Librae - -	4	15 20 9.60			S. 16 13	
25	20 Librae - -	3½	14 55 40.27			S. 24 43	
	5 Librae - -	4	15 20 9.62			16 13	
	Moon II. L.	- -	15 2 25.17	124.89	65.71	19 23	24.5 —680.5
	Moon II. U.	19.3	15 27 51.70	129.60	67.03	21 33	20.0 616.9
	δ Scorp̄ii -	3	15 51 50.51			22 12	
	β Scorp̄ii -	2	15 57 5.11			S. 19 24	
26	δ Scorp̄ii -	3	15 51 50.54			S. 22 12	
	β Scorp̄ii -	2	15 57 5.14			19 24	
	Moon II. L.	- -	15 54 16.75	134.61	68.39	23 29	25.4 —542.0
	Moon II. U.	20.3	16 21 42.75	139.73	70.25	25 9	20.7 455.2
	A Ophiuchi -	4½	17 6 30.55			26 23	
	ξ Ophiuchi -	4½	17 12 23.29			S. 20 57	
27	A Ophiuchi -	4½	17 6 30.58			S. 26 23	
	ξ Ophiuchi -	4½	17 12 23.32			20 57	
	Moon II. L.	- -	16 50 9.54			26 30	42.4 —156.4
	Moon II. U.	21.3	17 19 33.72			27 31	7.8 —145.9
	γ Sagittarii	4	17 55 50.19			29 35	
	δ Sagittarii	3½	18 11 46.96			S. 29 53	

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.					Declination.	Var. of C's Dec in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.				
			h m s	s	s	° ' "			
1856.									
Mar. 28	γ Sagittarii	4	17 55 50.18			S. 29 35			
	δ Sagittarii	3½	18 11 46.99			29 53			
	Moon II. L.	-	17 49 48.43	153.06	73.23	28 8 23.3	- 125		
	Moon II. U.	22.3	18 20 43.32	155.90	73.95	28 20 33.9	+ 4		
	σ Sagittarii	3	18 46 20.49			26 28			
	ζ Sagittarii	3½	18 53 27.05			S. 30 5			
29	σ Sagittarii	3	18 46 20.52			S. 26 28			
	ζ Sagittarii	3½	18 53 27.09			30 5			
	Moon II. L.	-	18 52 5.30	157.55	74.37	28 6 12.4	+ 139		
	Moon II. U.	23.4	19 23 39.67	157.96	74.47	27 24 28.9	277		
	ω Sagittarii	5½	19 47 0.86			26 41			
	c Sagittarii	4½	19 53 47.84			S. 28 6			
30	ω Sagittarii	5½	19 47 0.89			S. 26 41			
	c Sagittarii	4½	19 53 47.88			28 6			
	Moon II. L.	-	19 55 11.64	157.18	74.27	26 15 15.4	+ 414		
	Moon II. U.	24.4	20 26 27.98	155.40	73.82	24 39 7.6	546		
	ψ Capricorni	4½	20 37 33.59			25 47			
	ζ Capricorni	4	21 18 25.97			S. 23 2			
31	ψ Capricorni	4½	20 37 33.62			S. 25 47			
	ζ Capricorni	4	21 18 25.99			23 2			
	Moon II. L.	-	20 57 18.32	152.90	73.17	22 37 24.7	+ 669		
	Moon II. U.	25.4	21 27 35.87	149.99	72.42	20 12 2.3	782		
	δ Capricorni	3½	21 39 4.82			16 47			
	ι Aquarii	4½	21 58 38.76			S. 14 34			
Apr. 1	Moon II. L.	-	21 57 17.64	146.99	71.63	S. 17 25 28.8	+ 881		
	Moon II. U.	26.5	22 26 24.41	144.19	70.89	14 20 37.3	964		
2	Moon II. L.	-	22 54 59.82	141.80	70.24	S. 11 0 41.3	+ 1031		
	Moon II. U.	27.5	23 23 10.01	140.01	69.75	7 29 9.1	1080		
3	Moon II. L.	-	23 51 2.74	138.91	69.44	S. 3 49 41.4	+ 1110		
	Moon II. U.	28.6	0 18 46.87	138.58	69.33	S. 0 6 6.9	1121		
4	Moon II. L.	-	0 46 31.73	139.03	69.43	N. 3 37 41.3	+ 1113		
5	Moon I. U.	0.3	1 12 7.04	140.16	69.74	N. 7 17 47.0	+ 1084		
	Moon I. L.	-	1 40 19.33	142.00	70.23	10 50 17.5	1037		
6	Moon I. U.	1.3	2 8 57.23	144.40	70.86	N. 14 11 25.4	+ 971		
	Moon I. L.	-	2 38 6.24	147.15	71.58	17 17 34.7	887		
7	Moon I. U.	2.4	3 7 49.43	150.05	72.34	N. 20 5 25.4	+ 788		
	Moon I. L.	-	3 38 6.63	152.77	73.05	22 31 59.7	675		
8	Moon I. U.	3.4	4 8 54.07	155.03	73.64	N. 24 34 48.7	+ 551		
	Moon I. L.	-	4 40 4.18	156.50	74.03	N. 26 11 59.7	+ 419		

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
			h m s	s	s	° ' "	"
1856. Apr. 9	♄ Tauri - -	4½	4 54 29.01			N.21 23	
	♃ Tauri - -	5½	4 59 16.83			20 13	
	Moon I. U.	4.4	5 11 26.02	156.94	74.17	27 22 20.1	+283.5
	Moon I. L.	- -	5 42 46.10	156.19	74.00	28 5 23.2	147.2
	♆ Tauri - -	3½	5 29 2.19			21 3	
	♄ Tauri - -	4½	5 44 16.47			N.27 34	
10	♆ Tauri - -	3½	5 29 2.17			N.21 3	
	♄ Tauri - -	4½	5 44 16.45			27 34	
	Moon I. U.	5.5	6 13 49.83	154.23	73.54	28 21 26.6	+ 14.2
	Moon I. L.	- -	6 44 23.08	151.14	72.77	28 11 29.3	-112.4
	♊ Geminor.	3	6 35 4.46			25 16	
	♃ Geminor.	4	6 55 34.24			N.20 47	
11	♊ Geminor.	3	6 35 4.44			N.25 16	
	♃ Geminor.	4	6 55 34.23			20 47	
	Moon I. U.	6.5	7 14 13.55	147.14	71.78	27 37 4.2	-230.1
	Moon I. L.	- -	7 43 11.98	142.51	70.59	26 40 8.5	337.3
	α ³ Geminor.	1½	7 25 24.88			32 12	
	β Geminor.	1½	7 36 30.47			N.28 22	
12	α ² Geminor.	1½	7 25 24.87			N.32 12	
	β Geminor.	1½	7 36 30.46			28 22	
	Moon I. U.	7.5	8 11 12.45	137.53	69.29	25 22 54.0	-433.2
	Moon I. L.	- -	8 38 12.50	132.49	67.95	23 47 37.6	517.7
	θ Cancri - -	5½	8 23 23.61			18 35	
	γ Cancri - -	4½	8 34 57.70			N.21 59	
13	θ Cancri - -	5½	8 23 23.60			N.18 35	
	γ Cancri - -	4½	8 34 57.69			21 59	
	Moon I. U.	8.6	9 4 12.73	127.60	66.62	21 56 34.3	-591.1
	Moon I. L.	- -	9 29 16.11	123.04	65.36	19 51 52.8	654.2
	λ Leonis - -	4½	9 23 31.07			23 36	
	ε Leonis - -	3	9 37 41.51			N.24 26	
14	λ Leonis - -	4½	9 23 31.06			N.23 36	
	ε Leonis - -	3	9 37 41.50			24 26	
	Moon I. U.	9.6	9 53 27.54	118.95	64.20	17 35 32.4	-707.7
	Moon I. L.	- -	10 16 53.19	115.2	63.18	15 9 22.5	752.6
	α Leonis - *	1½	10 0 43.16			12 40	
	ρ Leonis - *	4	10 25 14.93			N.10 3	
15	α Leonis - *	1½	10 0 43.15			N.12 40	
	ρ Leonis - *	4	10 25 14.92			10 2	
	Moon I. U.	10.6	10 39 39.97	112.49	62.32	12	
	Moon I. L.	- -	11 1 55.38	110.19	61.64	9	
	χ Leonis - *	4½	10 57 36.64			8	
	σ Leonis - *	4	11 13 44.04			N. 6	
16	χ Leonis - *	4½	10 57 36.63			N.	

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. per. mer.	Declination.	Var. of C's Dist. in 1 hour of Long.
1856.			h m s	"	"	N. ° ' "	"
Apr. 16	♄ Leonis - *	4	11 13 44.04			N. 6 49	
	Moon I. U.	11.7	11 23 47.12	108.55	61.13	7 7 57.8	-841.4
	Moon I. L.	- -	11 45 23.05	107.55	60.82	4 17 58.8	857.3
	γ Virginis *	4½	11 38 29.07			7 20	
	β Virginis -	3½	11 43 13.19			N. 2 35	
17	γ Virginis *	4½	11 38 29.06			N. 7 20	
	β Virginis -	3½	11 43 13.18			2 35	
	Moon I. U.	12.7	12 6 51.04	107.22	60.69	N. 1 25 28.9	-866.6
	Moon I. L.	- -	12 28 18.99	107.55	60.77	S. 1 28 12.9	869.3
	η Virginis -	3½	12 12 33.86			N. 0 8	
	γ Virginis -	4	12 34 23.51			S. 0 40	
18	η Virginis -	3½	12 12 33.86			N. 0 8	
	γ Virginis -	4	12 34 23.51			S. 0 40	
	Moon I. U.	13.7	12 49 54.82	108.53	61.04	4 21 45.4	-865.0
	Moon I. L.	- -	13 11 46.35	110.17	61.50	7 13 43.8	853.5
	θ Virginis -	4½	13 2 31.45			4 46	
	α Virginis -	1	13 17 38.25			S. 10 25	
19	θ Virginis -	4½	13 2 31.46			S. 4 46	
	α Virginis -	1	13 17 38.25			10 25	
	Moon I. U.	14.8	13 34 1.40	112.45	62.15	10 2 37.4	-834.1
	κ Virginis -	4	14 5 14.86			9 36	
	λ Virginis -	4	14 11 21.09			S. 12 42	
20	κ Virginis -	4	14 5 14.87			S. 9 36	
	λ Virginis -	4	14 11 21.10			12 42	
	Moon II. L.	- -	13 58 53.52	115.50	62.97	12 46 48.5	-806.3
	Moon II. U.	15.8	14 22 20.14	119.03	63.96	15 24 31.7	769.3
	α ^s Libræ - -	2½	14 42 56.78			15 26	
	20 Libræ - -	3½	14 55 40.78			S. 24 43	
21	α ^s Libræ - -	2½	14 42 56.79			S. 15 26	
	20 Libræ - -	3½	14 55 40.80			24 43	
	Moon II. L.	- -	14 46 32.29	123.08	65.08	17 53 50.6	-722.1
	Moon II. U.	16.8	15 11 35.91	127.58	66.33	20 12 40.0	664.2
	ρ Scorpil - -	4	15 48 1.78			28 47	
	σ Scorpil - -	3	15 51 51.17			S. 22 12	
22	ρ Scorpil - -	4	15 48 1.80			S. 28 47	
	σ Scorpil - -	3	15 51 51.20			22 12	
	Moon II. L.	- -	15 37 35.42	132.38	67.63	22 18 45.7	-594.8
	Moon II. U.	17.9	16 4 33.53	137.30	68.95	24 9 47.4	513.4
	α Scorpil - -	1½	16 20 36.71			26 6	
	τ Scorpil - -	3½	16 26 57.14			S. 27 55	
23	α Scorpil - -	1½	16 20 36.73			S. 26 6	
	τ Scorpil - -	3½	16 26 57.18			27 55	
	Moon II. L.	- -	16 32 30.29	142.12	70.23	S. 25 43 19.9	-420.0

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	"
Apr. 23	Moon II. v.	18.9	17 1 22.80	146.55	71.39	S. 26 57 1.6	- 315.0
	θ Ophiuchi -	3½	17 13 11.69			24 51	
	d Ophiuchi -	4	17 18 11.27			S. 29 44	
24	θ Ophiuchi -	3½	17 13 11.72			S. 24 51	
	d Ophiuchi -	4	17 18 11.30			29 44	
	Moon II. L.	- -	17 31 4.70	150.30	72.38	27 48 39.8	- 199.7
	Moon II. v.	19.9	18 1 26.31	153.12	73.12	28 16 20.8	- 75.9
	φ Sagittarii	4½	18 36 40.83			27 8	
	σ Sagittarii	3	18 46 21.41			S. 26 28	
25	φ Sagittarii	4½	18 36 40.87			S. 27 8	
	σ Sagittarii	3	18 46 21.45			26 28	
	Moon II. L.	- -	18 32 15.10	154.80	73.58	28 18 38.4	+ 53.7
	Moon II. v.	21.0	19 3 16.81	155.27	73.73	27 54 41.1	+ 186.0
	h Sagittarii	4½	19 27 57.45			25 12	
	e Sagittarii	4½	19 53 48.77			S. 28 6	
26	h Sagittarii	4½	19 27 57.49			S. 25 12	
	c Sagittarii	4½	19 53 48.81			28 6	
	Moon II. L.	- -	19 34 16.91	154.55	73.58	27 4 16.0	+ 317.7
	Moon II. v.	22.0	20 5 2.06	152.82	73.17	25 47 51.4	+ 445.4
	ψ Capricorni	4½	20 37 34.47			25 47	
	ω Capricorni	5½	20 43 13.91			S. 27 27	
27	ψ Capricorni	4½	20 37 34.51			S. 25 47	
	ω Capricorni	5½	20 43 13.94			27 27	
	Moon II. L.	- -	20 35 21.50	150.32	72.56	24 6 32.5	+ 566.3
	Moon II. v.	23.0	21 5 7.91	147.36	71.82	22 1 55.9	+ 678.0
	γ Capricorni	4	21 32 6.82			17 19	
	δ Capricorni	3½	21 39 5.58			S. 16 47	
28	γ Capricorni	4	21 32 6.85			S. 17 19	
	δ Capricorni	3½	21 39 5.61			16 47	
	Moon II. L.	- -	21 34 17.61	144.25	71.01	19 36 3.7	+ 778.7
	Moon II. v.	24.1	22 2 50.56	141.28	70.24	16 51 17.1	+ 866.9
	τ Aquarii -	5½	22 41 57.83			14 21	
	θ Aquarii -	3	22 47 0.11			S. 16 35	
29	τ Aquarii -	5½	22 41 57.86			S. 14 21	
	θ Aquarii -	3	22 47 0.14			16 35	
	Moon II. L.	- -	22 30 49.89	138.68	55	13 50 11.0	+ 941.8
	Moon II. v.	25.1	22 58 21.17	136.64	58	10 35 31.2	+ 1002.4
	φ Aquarii -	5	23 6 51.68			6 49	
	ψ Aquarii -	5	23 11 27.91			S. 10 24	
30	Moon II. L.	- -	23 25 31.94			S. 7 10 12.0	+ 1048.1
	Moon II. v.	26.1	23 52 31.03			3 37 18.0	+ 1078.1
May 1	Moon II. L.	- -	0 19 28.11			S. 0 0 2.0	+ 1091.8

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				Declination.	V C in of
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. per. mer.			
1856.								
May 1	Moon II. u.	27.2	^h 0 ^m 46 ^s 33.19	136.04	68.69	N. 3 38 14.9	+	
2	Moon II. L.	- -	1 13 56.18	137.93	69.15	N. 7 14 3.3	+	
	Moon II. u.	28.2	1 41 46.41	140.56	69.80	10 43 44.8		
3	Moon II. L.	- -	2 10 11.90	143.78	70.62	N. 14 3 36.4	+	
	Moon II. u.	29.2	2 39 18.78	147.42	71.53	17 9 54.1		
4	Moon I. L.	- -	3 6 45.52	151.04	72.48	N. 19 58 59.8	+	
5	Moon I. u.	0.9	3 37 20.01	154.65	73.38	N. 22 27 28.7	+	
	Moon I. L.	- -	4 8 34.89	157.70	74.15	24 32 20.0		
6	Moon I. u.	2.0	4 40 21.29	159.84	74.69	N. 26 11 8.4	+	
	Moon I. L.	- -	5 12 26.13	160.73	74.93	27 22 14.6		
7	Moon I. u.	3.0	5 44 33.03	160.17	74.82	N. 28 4 51.7	+	
	Moon I. L.	- -	6 16 24.38	158.13	74.35	28 19 9.6	+	
8	η Geminor.	4	6 6 10.73			N. 22 33		
	μ Geminor.	3	6 14 14.58			22 35		
	Moon I. u.	4.0	6 47 42.96	154.75	73.55	28 6 10.1	-	
	Moon I. L.	- -	7 18 14.14	150.29	72.46	27 27 38.6		
	α ¹ Geminor.	1½	7 25 24.47			32 12		
	β Geminor.	1½	7 36 30.07			N. 28 22		
9	α ² Geminor.	1½	7 25 24.45			N. 32 12		
	β Geminor.	1½	7 36 30.05			28 22		
	Moon I. u.	5.1	7 47 46.95	145.09	71.17	26 25 50.1	-	
	Moon I. L.	- -	8 16 14.81	139.52	69.76	25 3 18.2		
	ψ ¹ Cancri - -	4	8 1 46.76			25 56		
	γ Cancri - -	4½	8 34 57.31			N. 21 59		
10	ψ ² Cancri - -	4	8 1 46.74			N. 25 56		
	γ Cancri - -	4½	8 34 57.30			21 59		
	Moon I. u.	6.1	8 43 35.25	133.91	68.31	23 22 39.5	-	
	Moon I. L.	- -	9 9 49.45	128.52	66.88	21 26 26.9		
	ξ Cancri - -	5½	9 1 5.08			22 38		
	λ Leonis - -	4½	9 23 30.69			N. 23 36		
11	ξ Cancri - -	5½	9 1 5.07			N. 22 38		
	λ Leonis - -	4½	9 23 30.68			23 36		
	Moon I. u.	7.1	9 35 1.37	123.55	65.54	19 17 3.3	-	
	Moon I. L.	- -	9 59 16.90	119.14	64.32	16 56 37.5		
	η Leonis - -	3½	9 59 29.51			17 28		
	γ Leonis - -	2	10 12 2.80			N. 20 34		
12	η Leonis - -	3½	9 59 29.50			N. 17 28		
	γ Leonis - -	2	10 12 2.79			20 34		
	Moon I. u.	8.2	10 22 43.37	115.38	63.26	N. 14 27 4.7	-	

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension <i>in Time.</i>	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	"
May 12	Moon I. L.	- -	10 45 28.76	112.30	62.37	N. 11 50 7.1	- 800.7
	c Leonis - *	5½	10 53 18.00			6 52	
	χ Leonis - *	4½	10 57 36.40			N. 8 7	
13	c Leonis - *	5½	10 53 17.99			N. 6 52	
	χ Leonis - *	4½	10 57 36.39			8 7	
	Moon I. U.	9.2	11 7 41.55	109.95	61.68	9 7 16.1	- 826.6
	Moon I. L.	- -	11 29 30.35	108.31	61.19	6 19 54.3	845.9
	τ Leonis - -	4	11 20 33.09			3 39	
	β Virginis -	3½	11 43 13.02			N. 2 35	
14	τ Leonis - -	4	11 20 33.08			N. 3 39	
	β Virginis -	3½	11 43 13.02			2 35	
	Moon I. U.	10.2	11 51 3.86	107.40	60.90	3 29 18.6	- 859.0
	Moon I. L.	- -	12 12 30.73	107.20	60.82	0 36 42.6	866.0
	ι Virginis -	6	12 2 19.98			2 42	
	η Virginis -	3½	12 12 33.75			N. 0 8	
15	ι Virginis -	6	12 2 19.97			N. 2 42	
	η Virginis -	3½	12 12 33.75			N. 0 8	
	Moon I. U.	11.3	12 33 59.59	107.73	60.94	S. 2 16 39.6	- 866.7
	Moon I. L.	- -	12 55 39.04	108.96	61.27	5 9 32.2	861.0
	ψ Virginis -	5	12 46 53.62			8 45	
	θ Virginis -	4½	13 2 31.46			S. 4 46	
16	ψ Virginis -	5	12 46 53.62			S. 8 45	
	θ Virginis -	4½	13 2 31.45			4 46	
	Moon I. U.	12.3	13 17 37.52	110.90	61.80	8 0 34.1	- 848.1
	Moon I. L.	- -	13 40 3.49	113.54	62.52	S. 10 48 16.6	827.6
	ζ Virginis -	4	13 27 23.30			N. 0 9	
	m Virginis -	5½	13 34 5.19			S. 7 58	
17	ζ Virginis -	4	13 27 23.30			N. 0 9	
	m Virginis -	5½	13 34 5.19			S. 7 58	
	Moon I. U.	13.3	14 3 5.13	116.85	63.44	13 31 1.6	- 798.4
	Moon I. L.	- -	14 26 50.25	120.78	64.50	16 6 59.1	759.5
	λ Virginis -	4	14 11 21.27			12 42	
	α' Libræ - -	2½	14 42 57.04			S. 15 26	
18	λ Virginis -	4	14 11 21.28			S. 12 42	
	α' Libræ - -	2½	14 42 57			15 26	
	Moon I. U.	14.4	14 51 2'		72	18 34 7.6	- 710.0
	Moon I. L.	- -	15 16		02	20 50 12.0	648.7
	γ' Libræ - -	4	15 20			16 13	
	κ Libræ - -	5	15 32			S. 1	
19	γ' Libræ - -	4	15				
	κ Libræ - -	5	15				
	Moon I. U.	15.4	15				574.9
	σ Scorpil -	4	16				

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	"
May 19	α Scorpii -	1½	16 20 37.25			S. 26 6	
20	σ Scorpii -	4	16 12 28.74			S. 25 15	
	α Scorpii -	1½	16 20 37.27			26 6	
	Moon II. L.	- -	16 13 25.41	140.75	69.73	24 39 18.1	-488.1
	Moon II. U.	16.4	16 42 4.27	145.66	71.00	26 7 10.0	388.4
	Δ Ophiuchi -	4½	17 6 32.07			26 23	
	θ Ophiuchi -	3½	17 13 12.36			S. 24 51	
21	Δ Ophiuchi -	4½	17 6 32.09			S. 26 23	
	θ Ophiuchi -	3½	17 13 12.38			24 51	
	Moon II. L.	- -	17 11 38.90	149.98	72.11	27 13 51.9	-276.7
	Moon II. U.	17.5	17 42 0.24	153.39	72.99	27 57 9.5	154.7
	δ Sagittarii	3½	18 11 48.74			29 53	
	λ Sagittarii	4	18 19 7.16			S. 25 30	
22	δ Sagittarii	3½	18 11 48.77			S. 29 53	
	λ Sagittarii	4	18 19 7.19			25 30	
	Moon II. L.	- -	18 12 55.56	155.61	73.58	28 15 16.1	-25.3
	Moon II. U.	18.5	18 44 9.58	156.48	73.83	28 7 1.7	+108.1
	ζ Sagittarii	3½	18 53 28.93			30 5	
	τ Sagittarii	4	18 57 58.93			S. 27 53	
23	ζ Sagittarii	3½	18 53 28.96			S. 30 5	
	τ Sagittarii	4	18 57 58.96			27 53	
	Moon II. L.	- -	19 15 25.83	156.00	73.75	27 31 59.8	+241.9
	Moon II. U.	19.5	19 46 28.59	154.27	73.36	26 30 30.6	372.1
	ν Capricorni	5	20 31 52.41			18 39	
	ψ Capricorni	4½	20 37 35.41			S. 25 47	
24	ν Capricorni	5	20 31 52.44			S. 18 39	
	ψ Capricorni	4½	20 37 35.45			25 47	
	Moon II. L.	- -	20 17 4.41	151.56	72.73	25 3 37.1	+495.4
	Moon II. U.	20.6	20 47 3.48	148.20	71.92	23 12 59.3	609.1
	ζ Capricorni	4	21 18 27.74			23 2	
	γ Capricorni	4	21 32 7.71			S. 17 19	
25	ζ Capricorni	4	21 18 27.77			S. 23 2	
	γ Capricorni	4	21 32 7.74			17 19	
	Moon II. L.	- -	21 16 20.05	144.54	71.01	21 0 43.7	+711.4
	Moon II. U.	21.6	21 44 52.44	140.89	70.09	18 29 15.8	801.1
	ι Aquarii -	4½	21 58 40.38			14 34	
	σ Aquarii -	5	22 23 2.22			S. 11 25	
26	ι Aquarii -	4½	21 58 40.41			S. 14 34	
	σ Aquarii -	5	22 23 2.26			11 25	
	Moon II. L.	- -	22 12 42.62	137.55	69.24	15 41 11.0	+877.5
	Moon II. U.	22.6	22 39 55.50	134.71	68.49	12 39 9.1	+940.5
	φ Aquarii -	5	23 6 52.47			6 49	
	ψ ³ Aquarii -	5	23 11 28.70			S. 10 24	

MOON-CULMINATING STARS. 461

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	"
May 27	♑ Aquarii -	5	23 6 52.50			S. 6 49	
	♃ Aquarii -	5	23 11 28.73			10 24	
	Moon II. L.	- -	23 6 38.22	132.54	67.91	9 25 52.8	+ 989.9
	Moon II. U.	23.7	23 32 59.51	131.15	67.53	6 4 5.5	1025.7
	27 Piscium -	5	23 51 18.37			4 21	
	33 Piscium -	5	23 57 58.21			S. 6 31	
28	27 Piscium -	5	23 51 18.40			S. 4 21	
	33 Piscium -	5	23 57 58.24			6 31	
	Moon II. L.	- -	23 59 9.22	130.61	67.36	S. 2 36 31.5	+ 1047.7
	Moon II. U.	24.7	0 25 17.74	130.96	67.42	N. 0 54 1.5	1055.4
	ε Piscium *	4	0 55 28.42			7 7	
	e Piscium *	5	1 0 57.23			N. 4 53	
29	ε Piscium *	4	0 55 28.44			N. 7 7	
	e Piscium *	5	1 0 57.26			4 53	
	Moon II. L.	- -	0 51 35.74	132.19	67.72	4 24 40.1	+ 1048.5
	Moon II. U.	25.7	1 18 13.72	134.28	68.24	7 52 24.6	1026.3
	o Piscium *	5	1 37 47.47			8 26	
	ξ Ceti - - *	5	2 5 21.96			N. 8 10	
30	Moon II. L.	- -	1 45 21.65	137.17	68.96	N. 11 14 6.7	+ 988.0
	Moon II. U.	26.8	2 13 8.34	140.72	69.84	14 26 30.1	933.0
31	Moon II. L.	- -	2 41 40.82	144.76	70.85	N. 17 26 11.5	+ 861.0
	Moon II. U.	27.8	3 11 3.50	149.04	71.90	20 9 45.3	771.8
June 1	Moon II. L.	- -	3 41 17.23	153.21	72.92	N. 22 33 50.6	+ 666.4
	Moon II. U.	28.8	4 12 18.47	156.88	73.82	24 35 21.5	546.4
2	Moon II. L.	- -	4 43 58.84	159.65	74.50	N. 26 11 38.2	+ 414.7
3	Moon I. U.	0.5	5 13 35.41	161.12	74.87	N. 27 20 42.1	+ 275.0
	Moon I. L.	- -	5 45 50.65	161.15	74.88	28 1 25.2	+ 132.0
4	Moon I. U.	1.6	6 17 56.60	159.57	74.51	N. 28 13 37.5	- 9.3
	Moon I. L.	- -	6 49 34.29	156.48	73.78	27 58 6.6	144.4
5	Moon I. U.	2.6	7 20 27.04	152.13	72.72	N. 27 16 31.3	- 269.5
	Moon I. L.	- -	7 50 21.99	146.91	71.45	26 11 7.6	382.1
6	Moon I. U.	3.6	8 10 00	141.21	70.03	N. 24 44 34.3	- 481.0
	Moon I. L.	- -	8 16	145.39	68.55	22 59 39.4	565.8
7	γ Cancri -					N. 21 59	
	ξ Cancri					22 38	
	Moon I				8	20 59 8.0	- 637.2
	Moon I					18 45 34.7	- 696.4
	λ Leonis					23 36	
	ε Leon					24 26	

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	"
June 8	λ Leonis - -	4½	9 23 30.39			N. 23 36	
	ϵ Leonis - -	3	9 37 40.82			24 26	
	Moon I. U.	5.7	10 3 12.02	119.89	64.46	16 21 19.8	-744.4
	Moon I. L.	- -	10 26 46.07	115.91	63.37	13 48 28.1	782.7
	B.A.C. 3579	6	10 21 7.34			15 5	
	ρ Leonis - *	4	10 25 14.35			N. 10 3	
9	B.A.C. 3579	6	10 21 7.33			N. 15 5	
	ρ Leonis - *	4	10 25 14.35			10 3	
	Moon I. U.	6.7	10 49 36.71	112.65	62.47	11 8 48.1	-812.6
	Moon I. L.	- -	11 11 52.78	110.15	61.76	8 23 55.1	835.0
	θ Leonis - -	3	11 6 41.98			16 13	
	ι Leonis - *	4	11 16 25.70			N. 11 19	
10	θ Leonis - -	3	11 6 41.97			N. 16 13	
	ι Leonis - *	4	11 16 25.69			11 19	
	Moon I. U.	7.8	11 33 43.38	108.41	61.26	5 35 14.0	-850.8
	Moon I. L.	- -	11 55 17.67	107.43	60.97	2 44 1.6	860.3
	β Virginis -	3½	11 43 12.78			2 35	
	π Virginis *	5	11 53 30.84			N. 7 25	
11	β Virginis -	3½	11 43 12.77			N. 2 35	
	π Virginis *	5	11 53 30.83			N. 7 25	
	Moon I. U.	8.8	12 16 44.77	107.21	60.90	S. 0 8 30.3	-864.0
	Moon I. L.	- -	12 38 13.81	107.75	61.05	3 1 11.6	861.9
	γ Virginis -	4	12 34 23.27			S. 0 40	
	δ Virginis *	3	12 48 22.49			N. 4 11	
12	γ Virginis -	4	12 34 23.26			S. 0 40	
	δ Virginis *	3	12 48 22.49			N. 4 11	
	Moon I. U.	9.8	12 59 53.88	109.05	61.41	S. 5 52 50.8	-853.6
	Moon I. L.	- -	13 21 54.08	111.10	61.98	8 42 11.2	838.7
	α Virginis -	1	13 17 38.18			10 25	
	m Virginis -	5½	13 34 5.10			S. 7 58	
13	α Virginis -	1	13 17 38.17			S. 10 25	
	m Virginis -	5½	13 34 5.10			7 58	
	Moon I. U.	10.9	13 44 23.40	113.90	62.76	11 27 49.3	-816.4
	Moon I. L.	- -	14 7 30.71	117.43	63.72	14 8 11.7	785.8
	κ Virginis -	4	14 5 14.99			9 36	
	λ Virginis -	4	14 11 21.26			S. 12 42	
14	κ Virginis -	4	14 5 14.99			S. 9 36	
	λ Virginis -	4	14 11 21.26			12 42	
	Moon I. U.	11.9	14 31 24.47	121.64	64.85	16 41 31	
	Moon I. L.	- -	14 56 12.49	126.45	66.14	19 5 46	
	α^s Libræ - -	2½	14 42 57.10			15 26	
	ν^s Libræ - -	5	14 58 38.27			S. 15 42	
15	α^s Libræ - -	2½	14 42 57.10			S. 15 26	

MOON-CULMINATING STARS. 463

Date.	Name.	Mag- nitude.	At Greenwich Transit.					Declination.	Var. of ☉'s Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of ☉'s R. A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.				
1856.			h m s	s	s	° ' "			
June 15	♄ Libræ - -	5	14 58 38.27			S. 15 42			
	Moon I. U.	12.9	15 22 1.26	131.75	67.52	21 18 42.1	-632.1		
	Moon I. L.	- -	15 48 55.52	137.33	68.96	23 17 45.6	556.2		
	♏ Scorpii -	3½	15 50 11.20			25 42.			
	♁ Scorpii -	2	15 57 6.48			S. 19 24			
16	♏ Scorpii -	3½	15 50 11.20			S. 25 42			
	♁ Scorpii -	2	15 57 6.49			19 24			
	Moon I. U.	14.0	16 16 57.23	142.94	70.37	25 0 15.8	-466.4		
	Moon I. L.	- -	16 46 4.87	148.25	71.70	26 23 25.2	362.8		
	B.A.C. 5579	5	16 33 17.38			17 28			
	A Ophiuchi-	4½	17 6 32.49			S. 26 23			
17	B.A.C. 5579	5	16 33 17.38			S. 17 28			
	A Ophiuchi-	4½	17 6 32.50			26 23			
	Moon I. U.	15.0	17 16 12.62	152.89	72.84	27 24 31.9	-246.2		
	γ Sagittarii	4	17 55 52.44			29 35			
	δ Sagittarii	3½	18 11 49.35			S. 29 53			
18	γ Sagittarii	4	17 55 52.45			S. 29 35			
	δ Sagittarii	3½	18 11 49.37			29 53			
	Moon I. L.	- -	17 47 10.18	156.53	73.72	28 1 12.0	-118.8		
	Moon II. U.	16.0	18 21 11.59	158.80	74.26	28 11 31.4	+ 16.5		
	σ Sagittarii	3	18 46 22.96			26 28			
	ζ Sagittarii	3½	18 53 29.63			S. 30 5			
19	σ Sagittarii	3	18 46 22.98			S. 26 28			
	ζ Sagittarii	3½	18 53 29.65			30 5			
	Moon II. L.	- -	18 53 2.75	159.45	74.44	27 54 21.1	+155.5		
	Moon II. U.	17.1	19 24 52.52	158.58	74.26	27 9 23.1	293.7		
	b Sagittarii	5	19 48 9.02			27 33			
	c Sagittarii	4½	19 53 50.56			S. 28 6			
20	b Sagittarii	5	19 48 9.05			S. 27 33			
	c Sagittarii	4½	19 53 50.58			28 6			
	Moon II. L.	- -	19 56 23.41	156.35	73.75	25 57 13.4	+426.7		
	Moon II. U.	18.1	20 27 20.91	153.08	72.97	24 19 19.3	550.5		
	ι Capricorni	5	21 14 15.59			17 27			
	ζ Capricorni	4	21 18 28.63			S. 23 2			
21	ι Capricorni	5	21 14 15.61			S. 17 27			
	ζ Capricorni	4	21 18 28.66			23 2			
	Moon II. L.	- -	20 57 34.78	149.15	72.02	22 17 48.2	+662.4		
	Moon II. U.	19.1	21 26 19.42	144.95	70.99	19 55 15.7	760.5		
	δ Canri		7.37			16 47			
	ι		7.26			S. 14 34			
22	δ		7.40			S. 16 47			
	ι			140.83	69.97	14 34			
						S. 17 14 35.1	+843.7		

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				Var. of C's Decl. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	
1856.			h m s	s	s	o ' "	
June 22	Moon II. v.	20.2	22 23 20.68	137.08	69.02	S. 14 18 47.0	+ 918.8
	♌ Aquarii -	5½	22 41 59.59			14 21	
	♍ Aquarii -	3	22 47 1.88			S. 16 35	
23	♌ Aquarii -	5½	22 41 59.62			S. 14 21	
	♍ Aquarii -	3	22 47 1.92			16 35	
	Moon II. L.	- -	22 50 25.82	133.90	68.22	11 10 52.2	+ 964.9
	Moon II. v.	21.2	23 16 57.16	131.46	67.58	7 53 47.4	1007.5
30	Piscium -	4½	23 54 35.72			6 49	
33	Piscium -	5	23 57 59.08			S. 6 31	
24	30 Piscium -	4½	23 54 35.76			S. 6 49	
	33 Piscium -	5	23 57 59.11			6 31	
	Moon II. L.	- -	23 43 4.12	129.85	67.16	4 30 24.4	+ 1028.0
	Moon II. v.	22.2	0 8 56.99	129.12	66.97	1 3 30.1	1038.8
20	Ceti - - -	5	0 45 40.07			S. 1 56	
	♋ Piscium *	4	0 55 29.25			N. 7 7	
25	20 Ceti - - -	5	0 45 40.10			S. 1 56	
	♋ Piscium *	4	0 55 29.28			N. 7 7	
	Moon II. L.	- -	0 34 46.50	129.29	67.01	2 24 11.7	+ 1036.0
	Moon II. v.	23.3	1 0 43.51	130.36	67.28	5 49 59.0	1019.6
	♎ Piscium -	4	1 23 47.65			14 36	
	♏ Piscium *	5	1 29 28.83			N. 11 24	
26	♎ Piscium -	4	1 23 47.68			N. 14 36	
	♏ Piscium *	5	1 29 28.87			11 24	
	Moon II. L.	- -	1 26 58.65	132.30	67.78	9 11 7.3	+ 989.4
	Moon II. v.	24.3	1 53 41.83	135.03	68.47	12 24 48.9	945.1
	31 Arietis *	5½	2 28 47.40			11 49	
	B.A.C. 845*	4	2 37 10.13			N. 9 30	
27	31 Arietis *	5½	2 28 47.44			N. 11 49	
	B.A.C. 845*	4	2 37 10.16			9 30	
	Moon II. L.	- -	2 21 1.97	138.43	69.33	15 28 11.6	+ 886.2
	Moon II. v.	25.3	2 49 6.15	142.33	70.31	18 18 18.1	812.4
	♈ Arietis -	4	3 3 24.31			19 11	
	17 Tauri - -	4½	3 36 20.07			N. 23 39	
28	Moon II. L.	- -	3 17 58.98	146.50	71.33	N. 20 52 8.7	+ 723.6
	Moon II. v.	26.4	3 47 41.82	150.60	72.34	23 6 46.5	620.3
29	Moon II. L.	- -	4 18 11.81	154.29	73.22	N. 24 59 24.6	+ 503.9
	Moon II. v.	27.4	4 49 21.53	157.16	73.90	26 27 37.8	376.6
30	Moon II. L.	- -	5 20 58.98	158.85	74.30	N. 27 29 33.9	+ 241.7
	Moon II. v.	28.5	5 52 48.33	159.11	74.35	28 4 3.8	+ 103.1
July 1	Moon II. L.	- -	6 24 31.54	157.83	74.04	N. 28 10 51.4	- 34.6

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R. A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856.			h m s	s	s	° ′ ″	"
July 2	Moon I. U.	0.1	6 53 23.61	155.21	73.36	N. 27 50 34.1	- 167.0
	Moon I. L.	- -	7 24 3.52	151.26	72.39	27 4 37.8	290.5
3	Moon I. U.	1.2	7 53 50.11	146.38	71.17	N. 25 55 8.6	- 402.2
	Moon I. L.	- -	8 22 34.56	140.97	69.81	24 24 37.7	500.6
4	Moon I. U.	2.2	8 50 12.54	135.36	68.38	N. 22 35 49.3	- 585.1
	Moon I. L.	- -	9 16 43.70	129.88	66.96	20 31 28.3	656.1
5	Moon I. U.	3.2	9 42 10.98	124.75	65.62	N. 18 14 13.0	- 714.4
	Moon I. L.	- -	10 6 39.70	120.14	64.39	15 46 28.8	761.2
6	α Leonis - *	1½	10 0 42.39			N. 12 40	
	γ Leonis - -	2	10 12 2.31			20 34	
	Moon I. U.	4.2	10 30 16.80	116.16	63.32	13 10 26.1	- 797.7
	Moon I. L.	- -	10 53 10.29	112.88	62.43	10 28 0.7	825.2
	χ Leonis - *	4½	10 57 35.91			8 7	
	θ Leonis - -	3	11 6 41.75			N. 16 13	
7	χ Leonis - *	4½	10 57 35.91			N. 8 7	
	θ Leonis - -	3	11 6 41.75			16 13	
	Moon I. U.	5.3	11 15 28.75	110.33	61.73	7 40 53.7	- 844.7
	Moon I. L.	- -	11 37 21.02	108.52	61.24	4 50 35.5	857.2
	ν Virginis *	4½	11 38 28.41			7 20	
	β Virginis -	3½	11 43 12.55			N. 2 35	
8	ν Virginis *	4½	11 38 28.40			N. 7 20	
	β Virginis -	3½	11 43 12.54			2 35	
	Moon I. U.	6.3	11 58 56.17	107.47	60.96	N. 1 58 26.2	- 863.3
	Moon I. L.	- -	12 20 23.24	107.17	60.90	S. 0 54 20.1	863.4
	η Virginis -	3½	12 12 33.30			N. 0 7	
	γ Virginis -	4	12 34 23.03			S. 0 40	
9	η Virginis -	3½	12 12 33.29			N. 0 7	
	γ Virginis -	4	12 34 23.02			S. 0 40	
	Moon I. U.	7.3	12 41 51.35	107.64	61.05	3 46 32.2	- 857.7
	Moon I. L.	- -	13 3 29.64	108.87	61.42	6 36 59.9	846.0
	θ Virginis -	4½	13 2 31.08			4 46	
	α Virginis -	1	13 17 37.95			S. 10 25	
10	θ Virginis -	4½	13 2 31.07			S. 4 46	
	α Virginis -	1	13 17 37.94			10 25	
	Moon I. U.	8.4	13 25 27.22	110.86	62.00	9 24 30.1	- 828.0
	Moon I. L.	- -	13 47 53.33	113.62	62.78	12 7 43.0	803.0
	89 Virginis -	5½	13 44 4.71			17 25	
	B.A.C. 4700	5½	14 3 0.43			S. 15 37	
11	89 Virginis -	5½	13 42 4.69			S. 17 25	
	B.A.C. 4700	5½	14 3 0.42			15 37	
	Moon I. U.	9.4	14 10 56.98	117.12	63.76	S. 14 45 10.3	- 770.2

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.					
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var C's l in 1 of L	
1856.			h m s					
July 11	Moon I. L.	- -	14 34 46.98	121° 33	64° 92	S. 17 15 11.7	-72	
	5 Libræ - -	6	14 38 3.49			14 51		
	α' Libræ - -	2½	14 42 56.95			S. 15 26		
12	5 Libræ - -	6	14 38 3.50			S. 14 51		
	α' Libræ - -	2½	14 42 56.94			15 26		
	Moon I. v.	10.4	14 59 31.55	126° 20	66° 22	19 35 52.8	-67	
	Moon I. L.	- -	15 25 17.79	131° 59	67° 64	21 45 2.6	61	
	η Libræ - -	4½	15 36 0.88			15 13		
	λ Libræ - -	4	15 45 1.23			S. 19 44		
13	η Libræ - -	4½	15 36 0.88			S. 15 13		
	λ Libræ - -	4	15 45 1.22			19 44		
	Moon I. v.	11.5	15 52 11.10	137° 34	69° 12	23 40 15.1	-53	
	Moon I. L.	- -	16 20 14.27	143° 18	70° 59	25 18 50.4	44	
	α Scorp̄ii - -	1½	16 20 37.59			26 6		
	τ Scorp̄ii - -	3½	16 26 58.09			S. 27 55		
14	α Scorp̄ii - -	1½	16 20 37.58			S. 26 6		
	τ Scorp̄ii - -	3½	16 26 58.09			27 55		
	Moon I. v.	12.5	16 49 26.59	148° 80	71° 98	26 38 0.3	-34	
	Moon I. L.	- -	17 19 43.08	153° 81	73° 19	27 34 58.3	22	
	θ Ophiuchi -	3½	17 13 12.95			24 51		
	d Ophiuchi -	4	17 18 12.62			S. 29 44		
15	θ Ophiuchi -	3½	17 13 12.95			S. 24 51		
	d Ophiuchi -	4	17 18 12.62			29 44		
	Moon I. v.	13.5	17 50 53.94	157° 80	74° 13	28 7 11.2	-9	
	Moon I. L.	- -	18 22 44.87	160° 43	74° 74	28 12 34.0	+4	
	φ Sagittarii	4½	18 36 42.71			27 8		
	σ Sagittarii	3	18 46 23.34			S. 26 28		
16	φ Sagittarii	4½	18 36 42.71			S. 27 8		
	σ Sagittarii	3	18 46 23.35			26 28		
	Moon I. v.	14.6	18 54 58.18	161° 50	74° 98	27 49 45.2	+18	
	Moon I. L.	- -	19 27 14.61	160° 96	74° 83	26 58 17.5	32	
	h' Sagittarii	4½	19 27 59.59			25 12		
	b Sagittarii	5	19 48 9.56			S. 27 33		
17	h' Sagittarii	4½	19 27 59.60			S. 25 12		
	b Sagittarii	5	19 48 9.57			27 33		
	Moon II. v.	15.6	20 1 44.20	158° 86	74° 33	25 38 42.0	+46	
	ψ Capricorni	4½	20 37 36.94			25 47		
	ω Capricorni	5½	20 43 16.43			S. 27 27		
18	ψ Capricorni	4½	20 37 36.96			S. 25 47		
	ω Capricorni	5½	20 43 16.45			27 27		
	Moon II. L.	- -	20 33 12.32	155° 67	73° 57	23 52 26.5	+59	
	Moon II. v.	16.6	21 3 57.26	151° 73	72° 61	21 41 47.4	+70	
	γ Capricorni	4	21 32 9.31			S. 17 19		

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856.			h m s	"	"	° ' "	"
July 18	♄ Capricorni	3½	21 39 8.09			S. 16 47	
19	γ Capricorni	4	21 32 9.34			S. 17 19	
	♄ Capricorni	3½	21 39 8.11			16 47	
	Moon II. L.	- -	21 33 52.61	147.47	71.56	19 9 35.8	+ 809.5
	Moon II. U.	17.7	22 2 56.70	143.25	70.51	16 19 5.8	892.6
	♈ Aquarii -	5	22 23 3.90			11 25	
	♄ Aquarii -	3	22 47 2.69			S. 16 35	
20	♈ Aquarii -	5	22 23 3.92			S. 11 25	
	♄ Aquarii -	3	22 47 2.72			16 35	
	Moon II. L.	- -	22 31 11.94	139.38	69.55	13 13 42.6	+ 958.4
	Moon II. U.	18.7	22 58 43.96	136.08	68.71	9 56 53.0	1007.1
	♈ Aquarii -	5	23 6 54.19			6 49	
	♄ Aquarii -	5	23 11 30.44			S. 10 24	
21	♈ Aquarii -	5	23 6 54.21			S. 6 49	
	♄ Aquarii -	5	23 11 30.46			10 24	
	Moon II. L.	- -	23 25 40.64	133.50	68.07	6 31 59.2	+ 1039.2
	Moon II. U.	19.7	23 52 11.30	131.75	67.63	3 2 17.0	1055.3
	12 Ceti - - -	6	0 22 43.31			4 45	
	13 Ceti - - -	6	0 27 52.13			S. 4 23	
22	12 Ceti - - -	6	0 22 43.34			S. 4 45	
	13 Ceti - - -	6	0 27 52.16			S. 4 23	
	Moon II. L.	- -	0 18 26.22	130.88	67.42	N. 0 29 7.1	+ 1056.3
	Moon II. U.	20.8	0 44 36.00	130.90	67.44	3 59 14.7	1042.6
	♉ Piscium *	4	0 55 30.15			7 7	
	♊ Piscium *	5	1 0 58.96			N. 4 53	
23	♉ Piscium *	4	0 55 30.18			N. 7 7	
	♊ Piscium *	5	1 0 58.99			4 53	
	Moon II. L.	- -	1 10 51.25	131.79	67.69	7 25 13.4	+ 1014.9
	Moon II. U.	21.8	1 37 22.13	133.50	68.15	10 44 16.1	973.3
	β Arietis -	3	1 46 42.92			20 6	
	α Arietis -	2	1 59 5.18			N. 22 47	
24	β Arietis -	3	1 46 42.97			N. 20 6	
	α Arietis -	2	1 59 5.2			22 47	
	Moon II. L.	- -	2 4 18.1		79	13 53 38.4	+ 918.1
	Moon II. U.	22.8	2 31 47.		58	16 50 37.3	849.4
	♄ Arietis -	4	3 3 25			19	
	♄ Arietis -	5	3 12 56			N. 20	
25	♄ Arietis -	4	3 3 :				
	♄ Arietis -	5	3 12 :				
	Moon II. L.	- -	2 59				67.3
	Moon II. U.	23.9	3 28				1.3
	♈ Tauri - -	4	4 14				
	♉ Tauri - -	3½	4 26				

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856.			h m s	"	"	° ' "	"
July 26	δ Tauri - -	4	4 14 38.90			N.17 12	
	ε Tauri - -	3½	4 20 13.59			18 51	
	Moon II.L.	- -	3 58 21.63	149.65	72.24	24 0 37.8	+ 565.1
	Moon II.U.	24.9	4 28 36.52	152.73	72.99	25 42 2.2	447.2
	ι Tauri - -	4½	4 54 30.22			21 23	
	β Tauri - -	2	5 17 12.17			N.28 29	
27	ι Tauri - -	4½	4 54 30.25			N.21 23	
	β Tauri - -	2	5 17 12.20			28 29	
	Moon II.L.	- -	4 59 23.97	155.01	73.52	26 58 58.2	+ 320.9
	Moon II.U.	26.0	5 30 32.46	156.20	73.79	N.27 50 1.0	188.9
28	Moon II.L.	- -	6 1 47.56	156.08	73.73	N.28 14 24.6	+ 55.0
	Moon II.U.	27.0	6 32 53.08	154.60	73.34	28 12 7.6	- 77.2
29	Moon II.L.	- -	7 3 32.92	151.83	72.63	N.27 43 54.3	- 203.8
	Moon II.U.	28.0	7 33 32.88	148.00	71.66	26 51 10.2	321.8
30	Moon II.L.	- -	8 2 41.83	143.39	70.47	N.25 35 54.0	- 428.9
	Moon II.U.	29.0	8 30 52.39	138.33	69.17	24 0 26.8	523.5
31	Moon I.L.	- -	8 55 45.44	133.35	67.81	N.22 7 21.8	- 605.2
Aug. 1	Moon I.U.	0.6	9 21 54.88	128.27	66.46	N.19 59 13.7	- 674.0
	Moon I.L.	- -	9 47 5.12	123.51	65.19	17 38 33.6	730.7
2	Moon I.U.	1.7	10 11 20.96	119.23	64.04	N.15 7 42.6	- 776.0
	Moon I.L.	- -	10 34 48.77	115.51	63.03	12 28 50.3	811.1
3	Moon I.U.	2.7	10 57 35.84	112.45	62.20	N. 9 43 53.2	- 837.0
	Moon I.L.	- -	11 19 50.12	110.05	61.55	6 54 36.7	854.5
4	Moon I.U.	3.7	11 41 39.85	108.35	61.10	N. 4 2 34.5	- 864.7
	Moon I.L.	- -	12 3 13.47	107.37	60.85	1 9 12.3	868.0
	π Virginis *	5	11 53 30.40			7 25	
	η Virginis -	3½	12 12 33.09			N. 0 7	
5	π Virginis *	5	11 53 30.40			N. 7 25	
	η Virginis -	3½	12 12 33.08			N. 0 7	
	Moon I.U.	4.8	12 24 39.51	107.09	60.81	S. 1 44 11.4	- 864.9
	Moon I.L.	- -	12 46 6.54	107.53	60.97	4 36 21.1	855.7
	γ Virginis -	4	12 34 22.79			0 40	
	ψ Virginis -	5	12 46 52.96			S. 8 45	
6	γ Virginis -	4	12 34 22.78			S. 0 40	
	ψ Virginis -	5	12 46 52.95			8 45	
	Moon I.U.	5.8	13 7 43.22	108.70	61.35	7 26 3.3	- 840.3
	Moon I.L.	- -	13 29 38.23	110.59	61.92	10 12 3.6	- 818.6
	α Virginis -	1	13 17 37.66			10 25	
	m Virginis -	5½	13 34 4.60			S. 7 58	

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of ☾'s Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of ☾'s R.A. in 1 hour of Long.	Sidereal Time of ☾'s Sem. pas. mer.	Declination.		
1856.			h m s	"	"	° ' "	"	
Aug. 7	α Virginis -	1	13 17 37.65			S. 10 25		
	m Virginis -	5½	13 34 4.59			7 58		
	Moon I. U.	6.8	13 52 0.30	113.21	62.69	12 53 2.7	-790.1	
	Moon I. L.	- -	14 14 58.02	116.53	63.66	15 27 34.7	754.0	
	κ Virginis -	4	14 5 14.50			9 36		
	λ Virginis -	4	14 11 20.77			S. 12 42		
8	κ Virginis -	4	14 5 14.49			S. 9 36		
	λ Virginis -	4	14 11 20.76			12 42		
	Moon I. U.	7.9	14 38 39.80	120.55	64.79	17 54 4.3	-709.5	
	Moon I. L.	- -	15 3 13.53	125.18	66.06	20 10 43.8	655.5	
	2c Libræ - -	3½	14 55 40.72			24 43		
	ζ' Libræ - -	4	15 20 10.31			S. 16 13		
9	2c Libræ - -	3½	14 55 40.70			S. 24 43		
	ζ' Libræ - -	4	15 20 10.30			16 13		
	Moon I. U.	8.9	15 28 46.09	130.33	67.45	22 15 32.4	-590.8	
	Moon I. L.	- -	15 55 22.90	135.85	68.90	24 6 14.9	514.2	
	π Scorpil - -	3½	15 50 10.87			25 42		
	β' Scorpil - -	2	15 57 6.21			S. 19 24		
10	π Scorpil - -	3½	15 50 10.85			S. 25 42		
	β' Scorpil - -	2	15 57 6.19			19 24		
	Moon I. U.	9.9	16 23 7.03	141.51	70.35	25 40 23.5	-425.0	
	Moon I. L.	- -	16 51 58.53	147.02	71.73	26 55 22.2	322.5	
	A Ophiuchi -	4½	17 6 32.47			26 23		
	θ Ophiuchi -	3½	17 13 12.79			S. 24 51		
11	A Ophiuchi -	4½	17 6 32.44			S. 26 23		
	θ Ophiuchi -	3½	17 13 12.78			24 51		
	Moon I. U.	11.0	17 21 53.50	152.03	72.96	27 48 32.9	-207.1	
	Moon I. L.	- -	17 52 43.76	156.17	73.94	28 17 27.6	-80.1	
	μ' Sagittarii	4	18 5 11.93			21 6		
	δ Sagittarii	3½	18 11 49.61			S. 29 53		
12	μ' Sagittarii	4	18 5 11.92			S. 21 6		
	δ Sagittarii	3½	18 11 49.60			29 53		
	Moon I. U.	12.0	18 24 16.88	159.12	74.62	28 19 59.8	+56.1	
	Moon I. L.	- -	18 56 17.05	160.65	74.96	27 54 39.3	198.0	
	φ Sagittarii	4½	18 36 42.71			27 8		
	σ Sagittarii	3	18 46 23.37			S. 26 28		
13	φ Sagittarii	4½	18 36 42.71			S. 27 8		
	σ Sagittarii	3	18 46 23.37			26 28		
	Moon I. U.	13.0	19 28 26.61	160.69	74.92	27 0 43.3	+34.1	
	Moon I. L.	- -	20 0 28.03	159.33	74.56	25 38 23.4	+48.1	
	ω Sagittarii	5½	19 47 4.24			26 41		
	c Sagittarii	4½	19 53 51.31			S. 28 6		
14	ω Sagittarii	5½	19 47 4.23			S. 26 41		

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of C's De in 1 hr of Lon
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
1856.			h m s					
Aug. 14	c Sngittarii	4½	19 53 51.31			S. 28 6		
	Moon I. u.	14.1	20 32 5.93	156.82	73.92	23 48 47.8	+ 61	
	Moon I. L.	- -	21 3 8.57	153.52	73.09	21 33 55.0		73
	ι Capricorni	5	21 14 16.65			17 27		
	ζ Capricorni	4	21 18 29.75			S. 23 2		
15	ι Capricorni	5	21 14 16.66			S. 17 27		
	ζ Capricorni	4	21 18 29.76			23 2		
	Moon I. u.	15.1	21 33 28.73	149.80	72.15	18 56 25.5	+ 83	
	δ Capricorni	3½	21 39 8.52			16 47		
	ι Aquarii -	4½	21 58 42.48			S. 14 34		
16	δ Capricorni	3½	21 39 8.53			S. 16 47		
	ι Aquarii -	4½	21 58 42.49			14 34		
	Moon I. L.	- -	22 5 26.07	145.89	71.20	15 59 31.2	+ 92	
	Moon II. u.	16.1	22 34 15.37	142.40	70.33	12 46 43.4		99
	λ Aquarii -	4	22 45 8.92			8 21		
	ψ Aquarii -	5	23 11 31.04			S. 10 24		
17	λ Aquarii -	4	22 45 8.94			S. 8 21		
	ψ Aquarii -	5	23 11 31.05			10 24		
	Moon II. L.	- -	23 2 25.65	139.42	69.57	9 21 45.2	+ 104	
	Moon II. u.	17.2	23 30 4.09	137.11	68.99	5 48 21.2		108
	30 Piscium -	4½	23 54 37.27			6 49		
	33 Piscium -	5	23 58 0.63			S. 6 31		
18	30 Piscium -	4½	23 54 37.29			S. 6 49		
	33 Piscium -	5	23 58 0.65			6 31		
	Moon II. L.	- -	23 57 19.38	135.58	68.61	S. 2 10 14.0	+ 109	
	Moon II. u.	18.2	0 24 21.27	134.88	68.45	N. 1 28 59.4		109
	ε Piscium *	4	0 55 30.90			7 7		
	e Piscium *	5	1 0 59.72			N. 4 53		
19	ε Piscium *	4	0 55 30.93			N. 7 7		
	e Piscium *	5	1 0 59.74			4 53		
	Moon II. L.	- -	0 51 19.80	135.02	68.51	5 5 50.1	+ 107	
	Moon II. u.	19.2	1 18 24.90	135.97	68.79	8 36 58.8		103
	π Piscium *	5	1 29 30.55			11 24		
	54 Ceti - - *	6	1 43 16.07			N. 10 20		
20	π Piscium *	5	1 29 30.57			N. 11 24		
	54 Ceti - - *	6	1 43 16.10			10 20		
	Moon II. L.	- -	1 45 46.01	137.67	69.26	11 59 13.8	+ 98	
	Moon II. u.	20.3	2 13 31.42	140.00	69.88	15 9 33.6		91
	π Arietis -	5	2 41 17.83			16 52		
	δ Arietis -	4	3 3 26.07			N. 19 11		
21	π Arietis -	5	2 41 17.85			N. 16 52		
	δ Arietis -	4	3 3 26.11			19 11		
	Moon II. L.	- -	2 41 47.85	142.81	70.63	N. 18 5 4.8	+ 83	

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				Declination.	Var. of ☉'s Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.			
1856.			h m s	s	s	° ' "	"	
Aug. 21	Moon II. U.	21·3	3 10 39·85	145·88	71·43	N.20 43 3·8	+741·8	
	γ Tauri - -	3	3 38 57·73			23 39		
	A' Tauri - -	5	3 56 13·03			N.21 41		
22	γ Tauri - -	3	3 38 57·76			N.23 39		
	A' Tauri - -	5	3 56 13·07			21 41		
	Moon II. L.	- -	3 40 9·07	148·96	72·21	23 0 59·7	+635·6	
	Moon II. U.	22·4	4 10 13·79	151·75	72·91	24 56 37·7	519·1	
	ι Tauri - -	4½	4 54 31·08			21 23		
	λ Tauri - -	5½	4 59 18·82			N.20 13		
23	ι Tauri - -	4½	4 54 31·11			N.21 23		
	λ Tauri - -	5½	4 59 18·86			20 13		
	Moon II. L.	- -	4 40 48·61	153·92	73·45	26 28 4·9	+394·2	
	Moon II. U.	23·4	5 11 44·34	155·19	73·76	27 33 57·0	263·7	
	ζ Tauri - -	3½	5 29 3·93			21 3		
	136 Tauri - -	4½	5 44 18·13			N.27 34		
24	ζ Tauri - -	3½	5 29 3·96			N.21 3		
	136 Tauri - -	4½	5 44 18·16			27 34		
	Moon II. L.	- -	5 42 48·81	155·35	73·78	28 13 24·7	+130·7	
	Moon II. U.	24·4	6 13 47·83	154·28	73·49	28 26 17·5	- 1·5	
	ε Geminor.	3	6 35 5·58			25 16		
	ζ Geminor.	4	6 55 35·12			N.20 47		
25	ε Geminor.	3	6 35 5·61			N.25 16		
	ζ Geminor.	4	6 55 35·15			20 47		
	Moon II. L.	- -	6 44 26·69	152·00	72·90	28 13 5·7	-129·5	
	Moon II. U.	25·5	7 14 31·75	148·68	72·04	27 34 57·8	250·4	
	α' Geminor.	1½	7 25 25·54			32 12		
	β Geminor.	1½	7 36 30·98			N.28 22		
26	Moon II. L.	- -	7 43 51·61	144·53	70·95	N.26 33 33·5	-361·9	
	Moon II. U.	26·5	8 12 18·21	139·84	69·72	25 10 56·6	462·3	
27	Moon II. L.	- -	8 39 46·79	134·91	68·40	N.23 29 25·4	-550·9	
	Moon II. U.	27·6	9 6 15·99	129·98	67·07	21 31 23·6	627·4	
28	Moon II. L.	- -	9 31 47·20	125	-9	N.19 19 15·5	-692·0	
	Moon II. U.	28·6	9 56 24·11	1		16 55 19·8	745·4	
29	Moon II. L.	- -	10 20 12·0			14 21 46·7	-788·4	
30	Moon I. U.	0·0	10 41			17·2	-821·6	
	Moon I. L.	- -	11 3			3	846·0	
31	Moon I. U.	1·1	11 25				-862·2	
	Moon I. L.	- -	11 47				870·8	
Sept. 1	Moon I. U.	2·1	12				3	

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of L in 11 of L
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.		
1856. Sept. 1	Moon I. L.	- -	h m s 12 30 22·25	107·05	60·70	S. 2 39 5·8	-86	
2	Moon I. U.	3·1	12 51 49·74	107·64	60·91	S. 5 31 24·7	-85	
	Moon I. L.	- -	13 13 28·20	108·88	61·31	8 20 41·2	83	
3	θ Virginis -	4½	13 2 30·59			S. 4 46		
	α Virginis -	1	13 17 37·42			10 25		
	Moon I. U.	4·2	13 35 25·55	110·79	61·90	11 5 35·0	-811	
	Moon I. L.	- -	13 57 49·66	113·34	62·67	13 44 43·5	77½	
	κ Virginis -	4	14 5 14·20			9 36		
	λ Virginis -	4	14 11 20·45			S. 12 42		
4	κ Virginis -	4	14 5 14·18			S. 9 36		
	λ Virginis -	4	14 11 20·44			12 42		
	Moon I. U.	5·2	14 20 48·26	116·53	63·61	16 16 37·9	-73½	
	Moon I. L.	- -	14 44 28·72	120·31	64·69	18 39 42·1	69	
	α' Libræ - -	2½	14 42 56·30			15 26		
	20 Libræ - -	3½	14 55 40·33			S. 24 43		
5	α' Libræ - -	2½	14 42 56·28			S. 15 26		
	20 Libræ - -	3½	14 55 40·31			24 43		
	Moon I. U.	6·2	15 8 57·85	124·63	65·92	20 52 11·8	-63	
	Moon I. L.	- -	15 34 21·44	129·37	67·22	22 52 12·3	56	
	ρ Scorp̄ii - -	4	15 48 1·71			28 47		
	δ Scorp̄ii - -	3	15 51 51·16			S. 22 12		
6	ρ Scorp̄ii - -	4	15 48 1·69			S. 28 47		
	δ Scorp̄ii - -	3	15 51 51·14			22 12		
	Moon I. U.	7·2	16 0 43·82	134·40	68·58	24 37 39·2	-48	
	Moon I. L.	- -	16 28 7·20	139·50	69·93	26 6 19·5	39	
	α Scorp̄ii - -	1½	16 20 36·92			26 6		
	τ Scorp̄ii - -	3½	16 26 57·41			S. 27 55		
7	α Scorp̄ii - -	1½	16 20 36·90			S. 26 6		
	τ Scorp̄ii - -	3½	16 26 57·40			27 55		
	Moon I. U.	8·3	16 56 31·08	144·43	71·19	27 15 55·1	-296	
	Moon I. L.	- -	17 25 51·65	148·90	72·32	28 4 8·5	184	
	A Ophiuchi -	4½	17 6 32·04			26 23		
	θ Ophiuchi -	3½	17 13 12·39			S. 24 51		
8	A Ophiuchi -	4½	17 6 32·02			S. 26 23		
	θ Ophiuchi -	3½	17 13 12·37			24 51		
	Moon I. U.	9·3	17 56 1·61	152·61	73·24	28 28 51·5	- 61	
	Moon I. L.	- -	18 26 50·23	155·30	73·88	28 28 14·5	+ 68	
	φ Sagittarii	4½	18 36 42·41			27 8		
	σ Sagittarii	3	18 46 23·08			S. 26 28		
9	φ Sagittarii	4½	18 36 42·39			S. 27 8		
	σ Sagittarii	3	18 46 23·07			26 28		
	Moon I. U.	10·3	18 58 4·18	156·80	74·22	S. 28 0 56·5	+ 204	

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				Var. of q's Dec in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of q's R.A. in 1 hour of Long.	Sidereal Time of q's Sem. pas. mer.	Declination.	
1856. Sept. 9	Moon I. L.	- -	h m s 19 29 28.68	157.07	74.25	S. 27 6 14.9	+ 342.3
	λ Sagittarii	4½	19 27 59.51			25 12	
	♁ Sagittarii	5	19 48 9.57			S. 27 33	
10	λ Sagittarii	4½	19 27 59.49			S. 25 12	
	♁ Sagittarii	5	19 48 9.56			27 33	
	Moon I. U.	11.4	20 0 49.19	156.17	73.99	25 44 10.3	+ 477.9
	Moon I. L.	- -	20 31 52.88	154.31	73.49	23 55 29.4	607.7
	♄ Capricorni	4½	20 37 37.19			25 47	
	♁ Capricorni	5½	20 43 16.71			S. 27 27	
11	♄ Capricorni	4½	20 37 37.18			S. 25 47	
	♁ Capricorni	5½	20 43 16.70			27 27	
	Moon I. U.	12.4	21 2 29.93	151.78	72.83	21 41 43.0	+ 728.2
	Moon I. L.	- -	21 32 34.15	148.90	72.07	19 5 0.4	836.6
	γ Capricorni	4	21 32 9.80			17 19	
	♁ Capricorni	3½	21 39 8.60			S. 16 47	
12	γ Capricorni	4	21 32 9.80			S. 17 19	
	♁ Capricorni	3½	21 39 8.60			16 47	
	Moon I. U.	13.4	22 2 3.26	145.98	71.31	16 8 4.2	+ 930.2
	Moon I. L.	- -	22 30 58.49	143.29	70.60	12 54 2.7	1007.2
	♈ Aquarii -	5	22 23 4.60			11 25	
	♁ Aquarii -	3	22 47 3.54			S. 16 35	
13	♈ Aquarii -	5	22 23 4.60			S. 11 25	
	♁ Aquarii -	3	22 47 3.54			16 35	
	Moon I. U.	14.5	22 59 23.99	141.06	70.02	9 26 23.9	+ 1066.2
	Moon I. L.	- -	23 27 26.29	139.45	69.61	S. 5 48 49.6	1106.3
	λ Piscium -	5	23 34 45.06			N. 0 59	
	20 Piscium -	5½	23 40 35.45			S. 3 34	
14	λ Piscium -	5	23 34 45.07			N. 0 59	
	20 Piscium -	5½	23 40 35.46			S. 3 34	
	Moon II. U.	15.5	23 57 32.32	138.54	69.39	S. 2 5 10.7	+ 1126.9
	♁ Piscium *	5	0 41 15.86			N. 6 48	
	20 Ceti - - -	5	0 45 42.22			S. 1 56	
15	♁ Piscium *	5	0 41 15.88			N. 6 48	
	20 Ceti - - -	5	0 45 42.23			S. 1 56	
	Moon II. L.	- -	0 25 13.61	138.4			9 + 1127.9
	Moon II. U.	16.6	0 52 58.91	139.1			6 1109.1
	μ Piscium *	4½	1 22 41.54				
	π Piscium *	5	1 29 31.71				
16	μ Piscium *	4½	1 22 41.54				
	π Piscium *	5	1 29 31.71				
	Moon II. L.	- -	1 20 57.88				+ 1071.1
	Moon II. U.	17.6	1 49				+ 1014.5
	ξ Arietis *	5½	2 17				

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sideral Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856. Sept. 16	B.A.C. 845 *	4	h m s 2 37 12.58	"	"	° ' " N. 9 30	"
17	ξ Arietis *	5½	2 17 9.10			N. 9 57	
	B.A.C. 845 *	4	2 37 12.61			9 30	
	Moon II.L.	- -	2 18 8.21	145.55	71.28	15 47 38.0	+940.1
	Moon II.U.	18.6	2 47 32.69	148.57	72.08	18 46 50.2	849.2
	δ Arietis -	4	3 3 26.89			19 11	
	γ Tauri - -	3	3 38 58.58			N.23 39	
18	δ Arietis -	4	3 3 26.92			N.19 11	
	γ Tauri - -	3	3 38 58.61			23 39	
	Moon II.L.	- -	3 17 34.15	151.67	72.89	21 26 20.1	+743.4
	Moon II.U.	19.7	3 48 11.67	154.52	73.63	23 43 20.8	624.7
	δ Tauri - -	4½	4 15 50.53			17 6	
	ε Tauri - -	3½	4 20 15.32			N.18 51	
19	δ Tauri - -	4½	4 15 50.56			N.17 6	
	ε Tauri - -	3½	4 20 15.35			18 51	
	Moon II.L.	- -	4 19 20.37	156.80	74.22	25 35 32.9	+495.8
	Moon II.U.	20.7	4 50 51.51	158.21	74.59	27 1 13.2	360.0
	β Tauri - -	2	5 17 14.02			28 29	
	ζ Tauri - -	3½	5 29 4.80			N.21 3	
20	β Tauri - -	2	5 17 14.05			N.28 29	
	ζ Tauri - -	3½	5 29 4.84			21 3	
	Moon II.L.	- -	5 22 32.86	158.47	74.67	27 59 18.7	+220.7
	Moon II.U.	21.7	5 54 9.83	157.47	74.44	28 29 31.5	+ 81.8
	μ Geminor.	3	6 14 17.08			22 35	
	σ Geminor.	3	6 35 6.45			N.25 16	
21	μ Geminor.	3	6 14 17.11			N.22 35	
	σ Geminor.	3	6 35 6.48			25 16	
	Moon II.L.	- -	6 25 27.03	155.19	73.88	28 32 18.7	- 53.0
	Moon II.U.	22.8	6 56 9.88	151.78	73.02	28 8 49.2	180.5
	α Geminor.	1½	7 25 26.38			32 12	
	β Geminor.	1½	7 36 31.78			N.28 22	
22	α Geminor.	1½	7 25 26.41			N.32 12	
	β Geminor.	1½	7 36 31.81			28 22	
	Moon II.L.	- -	7 26 6.14	147.48	71.93	27 20 45.8	-298.3
	Moon II.U.	23.8	7 55 6.91	142.58	70.66	26 10 15.5	404.8
	ψ Cancri - -	4	8 1 48.20			25 56	
	γ Cancri - -	4½	8 34 58.34			N.21 59	
23	ψ Cancri - -	4	8 1 48.23			N.25 56	
	γ Cancri - -	4½	8 34 58.37			21 59	
	Moon II.L.	- -	8 23 6.92	137.40	69.28	24 39 39.6	-499.1
	Moon II.U.	24.9	8 50 4.36	132.20	67.88	22 51 24.9	-581.3
	ξ Cancri - -	5½	9 1 5.85			22 38	
	λ Leonis - -	4½	9 23 31.23			N.23 36	

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of G's R.A. in 1 hour of Long.	Sideral Time of G's Sem. pas. mer.	Declination.	Var. of G's Dec. in 1 hour of Long.
1856.			h m s	"	"	° ' "	"
Sept. 24	ξ Cancri - -	5½	9 1 5.89			N. 22 38	
	λ Leonis - -	4½	9 23 31.26			23 36	
	Moon II. L.	- -	9 16 0.54	127.22	66.51	20 47 56.0	-651.6
	Moon II. U.	25.9	9 40 59.08	122.62	65.22	N. 18 31 31.2	710.7
25	Moon II. L.	- -	10 5 5.33	118.52	64.05	N. 16 4 20.6	-759.5
	Moon II. U.	26.9	10 28 25.74	114.99	63.02	13 28 22.4	798.7
26	Moon II. L.	- -	10 51 7.53	112.08	62.16	N. 10 45 27.8	-829.0
	Moon II. U.	28.0	11 13 18.23	109.81	61.49	7 57 18.5	851.2
27	Moon II. L.	- -	11 35 5.57	108.19	60.99	N. 5 5 29.4	-865.8
	Moon II. U.	29.0	11 56 37.33	107.21	60.69	N. 2 11 29.6	873.1
28	Moon II. L.	- -	12 18 1.19	106.88	60.59	S. 0 43 15.6	-873.3
29	Moon I. U.	0.3	12 37 23.48	107.14	60.67	S. 3 37 22.0	-866.6
	Moon I. L.	- -	12 58 53.91	108.04	60.94	6 29 26.9	853.0
30	Moon I. U.	1.4	13 20 38.82	109.55	61.40	S. 9 18 6.6	-832.3
	Moon I. L.	- -	13 42 45.53	111.67	62.04	12 1 53.8	804.3
Oct. 1	Moon I. U.	2.4	14 5 21.19	114.37	62.83	S. 14 39 19.1	-768.6
	Moon I. L.	- -	14 28 32.56	117.62	63.78	17 8 46.4	724.6
2	Moon I. U.	3.4	14 52 25.88	121.35	64.86	S. 19 28 34.0	-671.8
	Moon I. L.	- -	15 17 6.53	125.49	66.03	21 36 53.0	609.8
3	39 Libræ - -	4	15 28 18.67			S. 27 39	
	42 Libræ - -	5½	15 31 47.69			23 21	
	Moon I. U.	4.5	15 42 38.67	129.90	67.25	23 31 48.9	-537.9
	Moon I. L.	- -	16 9 4.70	134.44	68.50	25 11 21.0	455.8
	α Scorpæ - -	1½	16 20 36.50			26 6	
	τ Scorpæ - -	3½	16 26 56.98			S. 27 55	
4	α Scorpæ - -	1½	16 20 36.49			S. 26 6	
	τ Scorpæ - -	3½	16 26 56.97			27 55	
	Moon I. U.	5.5	16 36 24.97	138.90	69.70	26 33 26.3	-363.4
	Moon I. L.	- -	17 4 37.10	143.05	70.80	27 36 2.3	261.0
	θ Ophiuchi -	3½	17 13 11.93			24 51	
	d Ophiuchi -	4	17 18 11.56			S. 29 44	
5	θ Ophiuchi -	3½	17 13 11.91			S. 2	
	d Ophiuchi -	4	17 18 11.54				
	Moon I. U.	6.5	17 33 35.85	146.63	71.1		
	Moon I. L.	- -	18 3 13.13	149.43	72		
	μ' Sagittariæ	4	18 5 11.14				
	δ Sagittariæ	3½	18 11 48.76				
6	μ' Sagittariæ	4	18 5 11.13				

Date.	Name.	Mag- nitude.	At Greenwich Transit.					Declination.	Var. (°' D) in 1 hr of Lon.
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.				
1856.			h m s	°	'	° ' "			
Oct. 6	♄ Sagittarii	3½	18 11 48.74			S. 29 53			
	Moon I. U.	7.6	18 33 18.50	151.28	72.92	28 28	56.4	+ 9	
	Moon I. L.	-	19 3 39.85	152.09	73.13	27 57	12.4	22	
	♅ Sagittarii	3	18 46 22.61			26 28			
	♆ Sagittarii	3½	18 53 29.32			S. 30 5			
7	♅ Sagittarii	3	18 46 22.59			S. 26 28			
	♆ Sagittarii	3½	18 53 29.30			30 5			
	Moon I. U.	8.6	19 34 4.73	151.88	73.06	26 59	44.9	+ 35	
	Moon I. L.	-	20 4 21.53	150.78	72.77	25 36	46.6	47	
	♁ Sagittarii	5	19 48 9.15			27 33			
	♂ Sagittarii	4½	19 53 50.73			S. 28 6			
8	♁ Sagittarii	5	19 48 9.13			S. 27 33			
	♂ Sagittarii	4½	19 53 50.71			28 6			
	Moon I. U.	9.6	20 34 20.68	148.98	72.30	23 49	4.2	+ 59	
	Moon I. L.	-	21 3 55.39	146.75	71.71	21 37	55.7	71	
	♁ Capricorni	5	21 14 16.42			17 27			
	♆ Capricorni	4	21 18 29.53			S. 23 2			
9	♁ Capricorni	5	21 14 16.41			S. 17 27			
	♆ Capricorni	4	21 18 29.52			23 2			
	Moon I. U.	10.7	21 33 2.15	144.37	71.07	19 5	7.5	+ 81	
	Moon I. L.	-	22 1 40.63	142.08	70.45	16 12	50.3	90	
	♁ Capricorni	5	21 45 29.58			14 14			
	♁ Aquarii -	4½	21 58 42.45			S. 14 34			
10	♁ Capricorni	5	21 45 29.57			S. 14 14			
	♁ Aquarii -	4½	21 58 42.44			14 34			
	Moon I. U.	11.7	22 29 53.45	140.13	69.92	13 3	36.4	+ 98	
	Moon I. L.	-	22 57 45.69	138.68	69.51	9 40	16.5	104	
	♁ Aquarii -	4	22 45 9.10			8 21			
	♁ Aquarii -	5	23 10 28.61			S. 9 58			
11	♁ Aquarii -	4	22 45 9.09			S. 8 21			
	♁ Aquarii -	5	23 10 28.60			9 58			
	Moon I. U.	12.7	23 25 24.41	137.89	69.28	6 5	58.9	+ 109	
	Moon I. L.	-	23 52 58.03	137.85	69.25	2 24	7.7	1122	
	♁ Piscium -	4½	23 54 37.79			6 49			
	♁ Piscium -	5	23 58 1.17			S. 6 31			
12	♁ Piscium -	4½	23 54 37.79			S. 6 49			
	♁ Piscium -	5	23 58 1.17			S. 6 31			
	Moon I. U.	13.8	0 20 35.97	138.61	69.44	N. 1 21	37.0	+ 1132	
	Moon I. L.	-	0 48 27.98	140.19	69.84	5 7	22.9	+ 1122	
	♁ Piscium *	4	0 55 31.72			7 7			
	♁ Piscium *	5	1 1 0.56			N. 4 53			
13	♁ Piscium *	4	0 55 31.73			N. 7 7			
	♁ Piscium *	5	1 1 0.57			N. 4 53			

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				Var. of c's Dec. in 1 hour of Long.
			Apparent Right Ascension in Time.	Var. of c's R.A. in 1 hour of Long.	Sidereal Time of c's Sem. pas. mer.	Declination.	
1856.							
Oct. 13	Moon II. U.	14.8	^h 1 19 ^m 4.57	^s 142.67	^s 70.45	N. 8 49 7.5	+1091.7
	♁ Piscium *	5	1 37 50.99			8 26	
	ξ Ceti - *	5	2 5 25.59			N. 8 10	
14	♁ Piscium *	5	1 37 51.00			N. 8 26	
	ξ Ceti - *	5	2 5 25.60			8 10	
	Moon II. L.	-	1 47 54.37	145.74	71.24	12 22 40.6	+1040.3
	Moon II. U.	15.9	2 17 24.34	149.33	72.15	15 43 51.2	968.0
	♈ Arietis - -	5	2 51 2.55			20 46	
	♁ Arietis - -	4	3 3 27.51			N.19 11	
15	♈ Arietis - -	5	2 51 2.57			N.20 46	
	♁ Arietis - -	4	3 3 27.53			19 11	
	Moon II. L.	-	2 47 39.23	153.18	73.14	18 48 33.7	+ 875.8
	Moon II. U.	16.9	3 18 40.44	156.98	74.11	21 32 56.3	765.1
17	Tauri - -	4½	3 36 23.46			23 39	
	η Tauri - -	3	3 38 59.31			N.23 39	
16	17 Tauri - -	4½	3 36 23.48			N.23 39	
	η Tauri - -	3	3 38 59.34			23 39	
	Moon II. L.	-	3 50 25.09	160.35	74.97	23 53 31.9	+ 638.4
	Moon II. U.	17.9	4 22 45.50	162.87	75.62	25 47 28.9	499.3
	♁ Tauri - -	4½	4 54 32.82			21 23	
	β Tauri - -	2	5 17 14.92			N.28 29	
17	♁ Tauri - -	4½	4 54 32.84			N.21 23	
	β Tauri - -	2	5 17 14.95			28 29	
	Moon II. L.	-	4 55 29.23	164.18	75.98	27 12 44.1	+ 352.2
	Moon II. U.	19.0	5 28 19.93	164.00	75.98	28 8 9.1	201.9
	η Geminor.	4	6 6 14.20			22 33	
	μ Geminor.	3	6 14 17.97			N.22 35	
18	η Geminor.	4	6 6 14.23			N.22 33	
	μ Geminor.	3	6 14 18.00			22 35	
	Moon II. L.	-	6 0 59.11	162.25	75.59	28 33 37.1	+ 53.5
	Moon II. U.	20.0	6 33 8.20	159.02	74.83	28 29 59.6	- 88.3
	♁ Geminor.	3½	7 11 34.01			22 15	
	♁ Geminor.	4	7 16 49.65			N.28 5	
19	♁ Geminor.	3½	7 11 34.05			2 15	
	♁ Geminor.	4	7 16 49.69			.8 5	
	Moon II. L.	-	7 4 30.72			27 58 57	220.0
	Moon II. U.	21.0	7 34 53.92			27 "	39.1
	♁ Geminor.	5	7 44 43.45			7	
	ψ Cancri - -	4	8 1 49.01			5	
20	♁ Geminor.	5	7 44 43.53				
	ψ Cancri - -	4	8 1 49.12				
	Moon II. L.	-	8 4 "				
	Moon II. U.	22.1	8 32 "				

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R. A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856.			h m s	"	"	o ' "	"
Oct. 20	ξ Cancri - -	5½	9 1 6.65			N.22 38	
	83 Cancri - -	6	9 10 58.38			18 19	
21	ξ Cancri - -	5½	9 1 6.68			N.22 38	
	83 Cancri - -	6	9 10 58.41			18 19	
	Moon II. L.	- -	8 59 8.11	131.62	67.86	22 10 59.2	-612.9
	Moon II. U.	23.1	9 24 54.65	126.23	66.39	20 1 42.5	677.9
	ν Leonis - *	5½	9 50 30.11			13 8	
	α Leonis - *	1½	10 0 43.66			N.12 40	
22	ν Leonis - *	5½	9 50 30.14			N.13 8	
	α Leonis - *	1½	10 0 43.69			12 40	
	Moon II. L.	- -	9 49 39.68	121.38	65.03	17 40 35.9	-731.5
	Moon II. U.	24.1	10 13 30.41	117.18	63.83	15 9 48.3	774.9
	ρ Leonis - *	4	10 25 15.22			10 3	
	ι Leonis - *	6	10 41 42.55			N.11 18	
23	ρ Leonis - *	4	10 25 15.24			N.10 3	
	ι Leonis - *	6	10 41 42.58			11 18	
	Moon II. L.	- -	10 36 34.82	113.68	62.80	12 31 14.7	-809.3
	Moon II. U.	25.2	10 59 1.45	110.88	61.96	9 46 38.7	835.5
	σ Leonis - *	4	11 13 43.94			6 49	
	τ Leonis - -	4	11 20 33.14			N. 3 39	
24	σ Leonis - *	4	11 13 43.96			N. 6 49	
	τ Leonis - -	4	11 20 33.16			3 39	
	Moon II. L.	- -	11 20 58.80	108.80	61.32	6 57 33.1	-854.3
	Moon II. U.	26.2	11 42 35.42	107.42	60.88	N. 4 5 24.2	866.1
25	Moon II. L.	- -	12 3 59.69	106.73	60.64	N. 1 11 33.6	-871.2
	Moon II. U.	27.2	12 25 19.76	106.73	60.60	S. 1 42 39.2	869.8
26	Moon II. L.	- -	12 46 43.71	107.38	60.76	S. 4 35 55.6	-861.8
	Moon II. U.	28.3	13 8 19.37	108.67	61.11	7 26 54.4	846.9
27	Moon II. L.	- -	13 30 14.30	110.59	61.65	S.10 14 11.0	-824.7
	Moon II. U.	29.3	13 52 35.85	113.10	62.35	12 56 16.1	794.8
28	Moon I. L.	- -	14 13 24.52	116.01	63.20	S. 15 31 33.1	-756.6
29	Moon I. U.	0.6	14 36 57.42	119.55	64.20	S. 17 58 18.6	-709.5
	Moon I. L.	- -	15 1 15.38	123.50	65.30	20 14 42.5	652.9
30	Moon I. U.	1.6	15 26 22.68	127.75	66.47	S. 22 18 47.8	-586.1
	Moon I. L.	- -	15 52 21.89	132.13	67.67	24 8 30.7	509.1
31	Moon I. U.	2.7	16 19 13.50	136.45	68.83	S. 25 41 48.0	-421.9
	Moon I. L.	- -	16 46 55.43	140.48	69.92	26 56 36.4	324.5
Nov. 1	Moon I. U.	3.7	17 15 22.80	143.98	70.84	S. 27 51 1.2	-218.2

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of (ϵ 's R. A. in 1 hour of Long.	Sidereal Time of (ϵ 's Sem. pas. mer.	Declination.	Var. of (ϵ 's Dec. in 1 hour of Long.
856.			h m s	$^{\circ}$	$^{\circ}$	$^{\circ}$ ' "	$^{\circ}$ "
v. 1	Moon I. L.	- -	17 44 27.82	146.72	71.58	S. 28 23 22.3	- 104.2
	γ^1 Sagittarii	4	17 55 51.36			29 35	
	μ^1 Sagittarii	4	18 5 10.78			S. 21 6	
2	γ^1 Sagittarii	4	17 55 51.35			S. 29 35	
	μ^1 Sagittarii	4	18 5 10.77			21 6	
	Moon I. U.	4.7	18 14 0.31	148.53	72.07	28 32 20.4	+ 15.3
	Moon I. L.	- -	18 43 48.50	149.32	72.30	28 17 3.0	137.9
	σ Sagittarii	3	18 46 22.19			26 28	
	ζ Sagittarii	3½	18 53 28.88			S. 30 5	
3	σ Sagittarii	3	18 46 22.18			S. 26 28	
	ζ Sagittarii	3½	18 53 28.86			30 5	
	Moon I. U.	5.7	19 13 39.99	149.09	72.27	27 37 8.6	+ 261.0
	Moon I. L.	- -	19 43 23.07	147.95	72.00	26 32 47.6	381.9
	b Sagittarii	5	19 48 8.69			27 33	
	c Sagittarii	4½	19 53 50.27			S. 28 6	
4	b Sagittarii	5	19 48 8.68			S. 27 33	
	c Sagittarii	4½	19 53 50.26			28 6	
	Moon I. U.	6.8	20 12 47.84	146.08	71.54	25 4 40.6	+ 498.3
	Moon I. L.	- -	20 41 47.11	143.74	70.95	23 13 55.2	608.0
	ρ Capricorni	5	20 20 40.90			18 17	
	ψ Capricorni	4½	20 37 36.40			S. 25 47	
5	ρ Capricorni	5	20 20 40.88			S. 18 17	
	ψ Capricorni	4½	20 37 36.39			25 47	
	Moon I. U.	7.8	21 10 16.71	141.18	70.29	21 2 0.5	+ 709.6
	Moon I. L.	- -	21 38 15.68	138.68	69.64	18 30 43.5	801.6
	γ Capricorni	4	21 32 9.21			17 19	
	δ Capricorni	3½	21 39 8.04			S. 16 47	
6	γ Capricorni	4	21 32 9.20			S. 17 19	
	δ Capricorni	3½	21 39 8.03			16 47	
	Moon I. U.	8.8	22 5 46.00	136.44	69.04	15 42 5.4	+ 883.0
	Moon I. L.	- -	22 32 52.17	134.68	68.57	12 38 17.8	953.0
	τ^1 Aquarii	5½	22 42 0.87			14 21	
	δ Aquarii	3	22 47 3.22			S. 16 35	
7	τ^1 Aquarii	5½	22 42 0.86			21	
	δ Aquarii	3	22 47 3.21			35	
	Moon I. U.	9.9	22 59 40.78			21 43.6	+ 1010.6
	Moon I. L.	- -	23 26 20.07				1054.8
	χ Aquarii	5½	23 9 26.0				
	20 Piscium	5½	23 40 35.4				
8	χ Aquarii	5½	23 9 26.0				6
	20 Piscium	5½	23 40 35.4				5
	Moon I. U.	10.9	23 52 0				
	Moon I. L.	- -	0 19				

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.					Var. of R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of R.A. in 1 hour of Long.
			Apparent Right Ascension in Time.								
1856.			h	m	s				°	'	"
Nov. 8	10 Ceti - - -	6	0	19	17.56				S.	0	51
	13 Ceti - - -	6	0	27	53.51					4	23
9	10 Ceti - - -	6	0	19	17.56				S.	0	51
	13 Ceti - - -	6	0	27	53.51				S.	4	23
	Moon I. U.	12.0	0	46	59.51	137.05	69.06		N.	4	57 32.7 + 100
	Moon I. L.	- -	1	14	41.57	140.10	69.83			8	34 44.9 100
	ε Piscium *	4	0	55	31.77					7	7
	e Piscium *	5	1	1	0.62				N.	4	53
10	ε Piscium *	4	0	55	31.77				N.	7	7
	e Piscium *	5	1	1	0.62					4	53
	Moon I. U.	13.0	1	43	5.11	143.95	70.79			12	5 36.0 + 100
	Moon I. L.	- -	2	12	18.73	148.42	71.91			15	25 58.5 90
	α Arietis - -	2	1	59	7.47					22	47
	θ Arietis - -	6	2	10	11.02				N.	19	14
11	α Arietis - -	2	1	59	7.47				N.	22	47
	θ Arietis - -	6	2	10	11.03					19	14
	Moon I. U.	14.0	2	42	28.59	153.27	73.11			18	31 37.3 + 88
	17 Tauri - -	4½	3	36	23.96					23	39
	γ Tauri - -	3	3	38	59.83				N.	23	39
12	17 Tauri - -	4½	3	36	23.98				N.	23	39
	γ Tauri - -	3	3	38	59.84					23	39
	Moon II. L.	- -	3	16	5.95	158.36	74.31			21	18 16.7 + 77
	Moon II. U.	15.1	3	48	13.64	162.81	75.41			23	41 54.8 65
	κ' Tauri - -	5½	4	16	51.24					21	58
	ε Tauri - -	3½	4	20	16.70				N.	18	51
13	κ' Tauri - -	5½	4	16	51.26				N.	21	58
	ε Tauri - -	3½	4	20	16.72					18	51
	Moon II. L.	- -	4	21	9.74	166.34	76.28			25	38 58.5 + 51
	Moon II. U.	16.1	4	54	40.33	168.47	76.82			27	6 41.5 36
	β Tauri - -	2	5	17	15.72					28	29
	ζ Tauri - -	3½	5	29	6.45				N.	21	3
14	β Tauri - -	2	5	17	15.75				N.	28	29
	ζ Tauri - -	3½	5	29	6.47					21	3
	Moon II. L.	- -	5	28	26.16	168.84	76.95			28	3 20.9 + 20
	Moon II. U.	17.1	6	2	5.00	167.30	76.62			28	28 26.2 + 47
	μ Geminor.	3	6	14	18.84					22	35
	ε Geminor.	3	6	35	8.28				N.	25	16
15	μ Geminor.	3	6	14	18.87				N.	22	35
	ε Geminor.	3	6	35	8.31					25	16
	Moon II. L.	- -	6	35	14.11	163.93	75.86			28	22 41.1 - 100
	Moon II. U.	18.2	7	7	33.23	159.04	74.71			27	47 54.6 - 24
	α' Geminor.	1½	7	25	28.36					32	12
	β Geminor.	1½	7	36	33.68				N.	28	22

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of G's R.A. in 1 hour of Long.	Sidereal Time of G's Sem. pas. mer.	Declination.	Var. of G's Dec. in 1 hour of Long.
856.			h m s	"	"	° ' "	"
Nov. 16	α^1 Geminor.	1½	7 25 28.40			N. 32 12	
	β Geminor.	1½	7 36 33.72			28 22	
	Moon II. L.	- -	7 38 46.82	153.09	73.29	26 46 44.0	-366.8
	Moon II. U.	19.2	8 8 44.94	146.55	71.67	25 22 16.1	475.1
	θ Cancrī - -	5½	8 23 26.13			18 35	
	γ Cancrī - -	4½	8 35 0.13			N. 21 59	
17	θ Cancrī - -	5½	8 23 26.16			N. 18 35	
	γ Cancrī - -	4½	8 35 0.16			21 59	
	Moon II. L.	- -	8 37 23.41	139.88	69.99	23 37 47.4	-567.0
	Moon II. U.	20.3	9 4 42.88	133.43	68.32	21 36 30.7	643.3
	λ Leonis - -	4½	9 23 32.94			23 36	
	ϵ Leonis - -	3	9 37 43.20			N. 24 26	
18	λ Leonis - -	4½	9 23 32.98			N. 23 36	
	ϵ Leonis - -	3	9 37 43.23			24 26	
	Moon II. L.	- -	9 30 47.74	127.48	66.74	19 21 23.5	-705.6
	Moon II. U.	21.3	9 55 44.92	122.18	65.29	16 55 6.0	755.4
	34 Leonis - -	6	10 3 56.11			14 4	
	γ Leonis - -	2	10 12 4.41			N. 20 34	
19	34 Leonis - -	6	10 3 56.15			N. 14 4	
	γ Leonis - -	2	10 12 4.44			20 34	
	Moon II. L.	- -	10 19 42.93	117.62	64.02	14 19 57.7	-794.3
	Moon II. U.	22.3	10 42 50.97	113.86	62.94	11 37 59.5	823.9
	χ Leonis - *	4½	10 57 37.44			8 7	
	σ Leonis - *	4	11 13 44.68			N. 6 49	
20	χ Leonis - *	4½	10 57 37.47			N. 8 7	
	σ Leonis - *	4	11 13 44.72			6 49	
	Moon II. L.	- -	11 5 18.70	110.90	62.08	8 50 56.3	-845.4
	Moon II. U.	23.4	11 27 15.72	108.74	61.42	6 0 19.0	859.7
	ν Virginis *	4½	11 38 29.51			7 20	
	β Virginis -	3½	11 43 13.59			N. 2 35	
21	ν Virginis *	4½	11 38 29.54			N. 7 20	
	β Virginis -	3½	11 43 13.62			2 35	
	Moon II. L.	- -	11 48 51.50	107.35	60.99	3 7 30.1	-867.4
	Moon II. U.	24.4	12 10 15.24	106.73	60.77	N. 0 13 45.6	869.0
	χ Virginis -	5	12 31 50.90			S. 7 12	
	γ Virginis -	4	12 34 23.58			0 40	
22	χ Virginis -	5	12 31 50.93				
	γ Virginis -	4	12 34 23.60				
	Moon II. L.	- -	12 31 35.94				-864.6
	Moon II. U.	25.4	12 53 2.3				854.0
	θ Virginis -	4½	13 2 31.21				
	α Virginis -	1	13 17 38.				
23	Moon II. L.	- -	13 14 4.				0

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856. Nov. 23	Moon II. v.	26.5	^h 13 ^m 36 ^s 45.91	111.41	61.96	S. 11 6 1.0	-813.1
24	Moon II. L.	- -	13 59 19.21	114.25	62.73	S. 13 45 36.0	-781.5
	Moon II. v.	27.5	14 22 30.16	117.67	63.66	16 18 2.4	741.4
25	Moon II. L.	- -	14 46 25.36	121.61	64.72	S. 18 41 33.6	-692.1
	Moon II. v.	28.5	15 11 10.36	125.95	65.88	20 54 13.8	632.8
26	Moon II. L.	- -	15 36 49.08	130.53	67.10	S. 22 53 58.0	-561.7
	Moon II. v.	29.6	16 3 23.32	135.17	68.31	24 38 34.2	481.5
27	Moon I. L.	- -	16 28 33.34	139.42	69.47	S. 26 5 48.9	-389.1
28	Moon I. v.	0.8	16 56 50.98	143.42	70.50	S. 27 13 32.2	-286.4
	Moon I. L.	- -	17 25 52.51	146.69	71.35	27 59 46.9	174.6
29	Moon I. v.	1.9	17 55 27.66	148.99	71.95	S. 28 22 55.3	-55.9
	Moon I. L.	- -	18 25 23.76	150.16	72.26	28 21 50.6	+67.2
30	Moon I. v.	2.9	18 55 26.84	150.15	72.29	S. 27 55 58.2	+191.5
	Moon I. L.	- -	19 25 23.02	149.04	72.05	27 5 22.1	313.9
Dec. 1	♈ Sagittarii	4½	19 27 58.38			S. 25 12	
	♋ Sagittarii	5	19 48 8.40			27 33	
	Moon I. v.	4.0	19 55 0.06	147.00	71.56	25 50 43.1	+431.6
	Moon I. L.	- -	20 24 8.28	144.28	70.91	24 13 12.7	542.1
	♌ Capricorni	4½	20 37 36.07			25 47	
	♍ Capricorni	5½	20 43 15.58			S. 27 27	
2	♌ Capricorni	4½	20 37 36.06			S. 25 47	
	♍ Capricorni	5½	20 43 15.57			27 27	
	Moon I. v.	5.0	20 52 41.39	141.20	70.15	22 14 27.9	+643.7
	Moon I. L.	- -	21 20 36.67	138.03	69.36	19 56 23.0	735.3
	♎ Capricorni	4	21 18 28.78			23 2	
	♏ Capricorni	4	21 32 8.88			S. 17 19	
3	♎ Capricorni	4	21 18 28.77			S. 23 2	
	♏ Capricorni	4	21 32 8.87			17 19	
	Moon I. v.	6.0	21 47 54.73	135.03	68.60	17 21 4.3	+816.0
	Moon I. L.	- -	22 14 39.05	132.44	67.93	14 30 43.7	885.5
	♐ Aquarii	4½	21 58 41.79			14 34	
	♑ Aquarii	4½	22 9 16.36			S. 8 30	
4	♐ Aquarii	4½	21 58 41.77			S. 14 34	
	♑ Aquarii	4½	22 9 16.35			8 30	
	Moon I. v.	7.1	22 40 55.48	130.41	67.41	11 27 38.0	+943.6
	Moon I. L.	- -	23 6 51.79	129.10	67.06	8 14 5.1	+990.0
	♐ Aquarii	5	23 6 54.57			6 49	
	♑ Aquarii	5	23 11 30.86			S. 10 24	

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of Q's R.A. in 1 hour of Long.	Sidereal Time of Q's Sem. pas. mer.	Declination.	Var. of Q's Dec. in 1 hour of Long.
1856.			h m s	"	"	° ' "	"
ec. 5	φ Aquarii -	5	23 6 54.55			S. 6 49	
	ψ Aquarii -	5	23 11 30.85			10 24	
	Moon I. U.	8.1	23 32 37.05	128.59	66.91	4 52 27.2	+1024.3
	Moon I. L.	- -	23 58 21.38	128.95	67.01	1 25 11.9	1046.1
	20 Piscium -	5½	23 40 35.14			3 34	
	27 Piscium -	5	23 51 20.91			S. 4 21	
6	20 Piscium -	5½	23 40 35.13			S. 3 34	
	27 Piscium -	5	23 51 20.90			S. 4 21	
	Moon I. U.	9.1	0 24 15.55	130.24	67.34	N. 2 5 5.8	+1054.5
	Moon I. L.	- -	0 50 30.76	132.46	67.91	5 35 39.2	1048.6
	ε Piscium *	4	0 55 31.63			7 7	
	e Piscium *	5	1 1 0.49			N. 4 53	
7	ε Piscium *	4	0 55 31.63			N. 7 7	
	e Piscium *	5	1 1 0.49			4 53	
	Moon I. U.	10.2	1 17 18.20	135.60	68.71	9 3 28.5	+1026.9
	Moon I. L.	- -	1 44 48.61	139.60	69.73	12 25 16.8	988.2
	π Piscium *	5	1 29 31.60			11 24	
	ο Piscium *	5	1 37 51.09			N. 8 26	
8	π Piscium *	5	1 29 31.59			N. 11 24	
	ο Piscium *	5	1 37 51.09			8 26	
	Moon I. U.	11.2	2 13 11.62	144.35	70.92	15 37 30.8	+ 931.0
	Moon I. L.	- -	2 42 34.87	149.60	72.21	18 36 22.5	854.3
	ε Arietis -	5	2 51 3.06			20 46	
	δ Arietis -	4	3 3 28.08			N. 19 11	
9	ε Arietis -	5	2 51 3.06			N. 20 46	
	δ Arietis -	4	3 3 28.08			19 11	
	Moon I. U.	12.2	3 13 2.80	155.06	73.53	21 17 54.3	+ 757.6
	Moon I. L.	- -	3 44 35.35	160.29	74.79	23 38 8.8	641.5
	17 Tauri - -	4½	3 36 24.23			23 39	
	η Tauri - -	3	3 39 0.10			N. 23 39	
10	17 Tauri - -	4½	3 36 24.23			N. 23 39	
	η Tauri - -	3	3 39 0.10			23 39	
	Moon I. U.	13.3	4 17 6.84	164.78	75.84	25 33 22.9	+ 508.1
	Moon I. L.	- -	4 50 25.13	168.00	76.60	27 0 28.4	360.8
	ι Tauri - -	4½	4 54 33.98			21 23	
	β Tauri - -	2	5 17 16.27			N. 28	
11	ι Tauri - -	4½	4 54 34.00			N.	
	β Tauri - -	2	5 17 16.29				
	Moon II. U.	14.3	5 26 45.97	169.51	76.94		
	η Geminor.	4	6 6 15.70				
	ν Geminor.	4	6 20 29.27				
12	η Geminor.	4	6 6 15.72				
	ν Geminor.	4	6 20 29.29				

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R.A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. of C's Dec. in 1 hour of Long.
1856. Dec. 12	Moon II. L.	- -	h m s 6 0 38.67	168.91	76.82	N. 28 22 19.5	+ 46.9
	Moon II. U.	15.3	6 34 11.95	166.30	76.22	28 16 10.1	- 107.1
	γ Geminor.	4	7 16 51.47			28 5	
	α' Geminor.	1½	7 25 29.23			N. 32 12	
13	γ Geminor.	4	7 16 51.49			N. 28 5	
	α' Geminor.	1½	7 25 29.26			32 12	
	Moon II. L.	- -	7 7 2.89	161.92	75.20	27 40 7.0	- 251.2
	Moon II. U.	16.4	7 38 52.72	156.21	73.84	26 36 36.3	381.1
	ψ Cancri - -	4	8 1 50.96			25 56	
	θ Cancri - -	5½	8 23 27.00			N. 18 35	
14	ψ Cancri - -	4	8 1 50.99			N. 25 56	
	θ Cancri - -	5½	8 23 27.03			18 35	
	Moon II. L.	- -	8 9 28.61	149.69	72.27	25 8 45.5	- 494.3
	Moon II. U.	17.4	8 38 43.95	142.86	70.57	23 20 1.6	590.0
	ξ Cancri - -	5½	9 1 8.55			22 38	
	λ Leonis - -	4½	9 23 33.90			N. 23 36	
15	ξ Cancri - -	5½	9 1 8.58			N. 22 38	
	λ Leonis - -	4½	9 23 33.93			23 36	
	Moon II. L.	- -	9 6 37.72	136.15	68.87	21 13 53.2	- 668.6
	Moon II. U.	18.5	9 33 13.34	129.88	67.25	18 53 38.3	731.4
	η Leonis - -	3½	9 59 32.21			17 28	
	γ Leonis - -	2	10 12 5.37			N. 20 34	
16	η Leonis - -	3½	9 59 32.24			N. 17 28	
	γ Leonis - -	2	10 12 5.40			20 34	
	Moon II. L.	- -	9 58 37.28	124.24	65.75	16 22 14.6	- 780.4
	Moon II. U.	19.5	10 22 58.02	119.35	64.43	13 42 18.0	817.2
	c Leonis - *	5½	10 53 20.00			6 52	
	χ Leonis - *	4½	10 57 38.35			N. 8 7	
17	c Leonis - *	5½	10 53 20.03			N. 6 52	
	χ Leonis - *	4½	10 57 38.39			8 7	
	Moon II. L.	- -	10 46 25.06	115.29	63.31	10 56 3.8	- 843.6
	Moon II. U.	20.5	11 9 8.39	112.07	62.40	8 5 26.6	861.2
	τ Leonis - -	4	11 20 34.80			3 39	
	ν Virginis *	4½	11 38 30.41			N. 7 20	
18	τ Leonis - -	4	11 20 34.84			N. 3 39	
	ν Virginis *	4½	11 38 30.44			7 20	
	Moon II. L.	- -	11 31 18.06	109.68	61.72	5 12 4.7	- 871.2
	Moon II. U.	21.6	11 53 4.06	108.12	61.27	2 17 24.2	874.5
	10 Virginis -	6	12 2 21.27			2 42	
	η Virginis -	3½	12 12 34.93			N. 0 8	
19	10 Virginis -	6	12 2 21.30			N. 2 42	
	η Virginis -	3½	12 12 34.97			N. 0 8	
	Moon II. L.	- -	12 14 36.11	107.35	61.04	S. 0 37 18.5	- 871.6

MOON-CULMINATING STARS.

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Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of ☉'s R.A. in 1 hour of Long.	Sidereal Time of ☉'s Sem. pas. mer.	Declination.	Var. of ☉'s Dec. in 1 hour of Long.
1856.			h m s	s	s	° ' "	"
Dec. 19	Moon II. U.	22.6	12 36 3.68	107.37	61.02	S. 3 30 51.7	-863.0
	ψ Virginis -	5	12 46 54.50			8 45	
	g Virginis -	5	13 0 23.74			S. 9 58	
20	ψ Virginis -	5	12 46 54.54			S. 8 45	
	g Virginis -	5	13 0 23.77			9 58	
	Moon II. L.	- -	12 57 36.09	108.15	61.23	6 22 6.4	-848.5
	Moon II. U.	23.6	13 19 22.31	109.68	61.65	9 9 51.8	828.0
	B.A.C. 4531	6	13 27 4.18			12 28	
	86 Virginis -	6	13 38 18.43			S. 11 42	
21	B.A.C. 4531	6	13 27 4.21			S. 12 28	
	86 Virginis -	6	13 38 18.47			11 42	
	Moon II. L.	- -	13 41 31.17	111.92	62.26	11 52 53.2	-801.1
	Moon II. U.	24.7	14 4 11.13	114.85	63.06	14 29 48.3	766.9
	λ Virginis -	4	14 11 21.52			12 42	
	α' Libræ - -	2½	14 42 57.10			S. 15 26	
22	λ Virginis -	4	14 11 21.55			S. 12 42	
	α' Libræ - -	2½	14 42 57.13			15 26	
	Moon II. L.	- -	14 27 30.19	118.43	64.02	16 59 6.7	-724.7
	Moon II. U.	25.7	14 51 35.57	122.56	65.12	19 19 6.1	673.5
	ζ' Libræ - -	4	15 20 10.42			16 13	
	γ Libræ - -	4½	15 27 30.39			S. 14 18	
23	Moon II. L.	- -	15 16 33.44	127.15	66.33	S. 21 27 51.9	-612.4
	Moon II. U.	26.7	15 42 28.25	132.02	67.60	23 23 19.7	540.3
24	Moon II. L.	- -	16 9 22.18	136.96	68.86	S. 25 3 14.0	-456.8
	Moon II. U.	27.8	16 37 14.54	141.70	70.06	26 25 15.9	361.6
25	Moon II. L.	- -	17 6 1.10	145.95	71.11	S. 27 27 8.3	-255.3
	Moon II. U.	28.8	17 35 33.95	149.36	71.97	28 6 45.6	139.4
26	Moon II. L.	- -	18 5 41.55	151.70	72.54	S. 28 22 24.2	- 16.0
27	Moon I. U.	0.1	18 33 44.12	152.75	72.81	S. 28 12 53.1	+111.7
	Moon I. L.	- -	19 4 17.30	152		27 37 40.8	240.2
28	Moon I. U.	1.2	19 34 40.62			26 37 0.5	+365.8
	Moon I. L.	- -	20 4 40			25 11 46.2	485.2
29	Moon I. U.	2.2	20 30			18.23 23	195.7
	Moon I. L.	- -	21 :			21 14	5.1
30	Moon I. U.	3.3	21 :			18	3
	Moon I. L.	- -	21 :			11	5
31	♄ Capricorni	3½	21				
	♋ Aquarii -	4½	2*				

MOON-CULMINATING STARS.

Date.	Name.	Mag- nitude.	At Greenwich Transit.				
			Apparent Right Ascension in Time.	Var. of C's R. A. in 1 hour of Long.	Sidereal Time of C's Sem. pas. mer.	Declination.	Var. C's I in 1 of L
1856. Dec. 31	Moon I. U.	4.3	^h 22 ^m 34 ^s 56.79	132.04	67.71	S. 13 4 31.0	+91
	Moon I. L.	- -	22 51 6.43	129.68	67.11	9 55 55.8	+96
	♃ Aquarii -	3	22 47 2.63			16 35	
	♆ Aquarii -	5	23 6 54.30			S. 6 49	

ECLIPSES OF THE SUN AND MOON.

In the Year 1856 there will be two Eclipses of the Sun, and two of the Moon.

I.—A Total Eclipse of the SUN, April 4, 1856, invisible at Greenwich.

Begins on the Earth generally April 4^d 15^h 44^m.9, Mean Time at Greenwich,
in Longitude 44° 39' E. of Greenwich, and Latitude 58° 51' S.

Central Eclipse begins generally April 4^d 16^h 57^m.6,
in Longitude 48° 58' E. of Greenwich, and Latitude 78° 47' S.

Central Eclipse at Noon April 4^d 17^h 16^m.9,
in Longitude 101° 28' E. of Greenwich, and Latitude 57° 53' S.

Central Eclipse ends generally April 4^d 19^h 3^m.8,
in Longitude 162° 0' E. of Greenwich, and Latitude 23° 58' S.

Ends on the Earth generally April 4^d 20^h 16^m.5,
in Longitude 146° 17' E. of Greenwich, and Latitude 2° 42' S.

The central and limiting lines of the Eclipse, in the annexed diagram, have been laid down from the following calculated positions :—

Line of Central and Total Eclipse.			
Longitude.	Latitude.	Longitude.	Latitude.
48° 58' E.	78° 47' S.	120° 50' E.	37° 21' S.
70 35	74 33	123 47	34 32
83 11	69 57	126 57	31 55
92 12	64 59	131 23	28 57
99 56	59 13	137 36	26 4
106 55	52 36	143 32	24 27
111 30	47 37	149 11	23 42
114 42	44 0	155 8	23 31
117 38 E.	40 43 S.	162 0 E.	23 58 S.

Northern line of Simple Contact.							
Longitude.		Latitude.		Longitude.		Latitude.	
31	8 E.	42	47 S.	100	9 E.	4	39 S.
43	59	40	53	105	21	0	25 N.
49	44	39	34	111	35	5	12
56	59	37	24	119	59	9	39
65	52	33	48	128	46	12	27
75	23	28	24	135	30	13	45
83	57	21	41	142	30	14	11
90	7	15	36	147	7	14	15
95	16 E.	9	58 S.	157	4 E.	13	38 N.

Eclipse begins at Sun-set.				Eclipse ends at Sun-rise.	
Longitude.	Latitude.	Longitude.	Latitude.	Longitude.	Latitude.
133	0 E.	176	36 E.	31	13 E.
	83		27		42
	35 S.		21 S.		49 S.
168	5	175	19	28	8
	79		21		43
	12		45		40
177	55 E.	173	33	25	35
	73		15		45
	36		34		47
178	49 W.	172	1	23	24
	67		9		49
	38		4		13
178	38	169	58	22	12
	63		2		54
	2		40 S.		41
178	18	167	41	20	45
	55		1		58
	48		34 N.		49
179	8 W.	165	31	21	19
	49		7		65
	18		7		2
179	47 E.	162	54	23	52
	43		10		71
	0		36		13
178	38	160	8	30	36
	37		12		76
	3		44		52
177	30 E.	157	0 E.	46	21
	31		13		81
	34 S.		36 N.		23
				72	51
					83
					36
				102	45 E.
					83
					41 S.

PATH OF THE MOON'S SHADOW AND PENUMBRA UPON THE SURFACE OF THE EARTH, DURING THE TOTAL ECLIPSE OF THE SUN, APRIL 4, 1856.



II.—*A Partial Eclipse of the MOON, April 19, 1856, invisible at Greenwich.*

	h	m	
First contact with the Penumbra - -	18	15·3	} Mean Time at Greenwich.
First contact with the Shadow - - -	19	34·1	
Middle of the Eclipse - - - - -	21	6·4	
Last contact with the Shadow - - -	22	38·7	
Last contact with the Penumbra - -	23	57·5	

At these times respectively the Moon will be in the Zenith of the places whose positions are,

Longitude 95° 35'	} W. of Greenwich.	Latitude 11° 35' S.
114 43		11 53
137 9		12 19
159 34		12 33
178 43		12 51 S.

Magnitude of the Eclipse (Moon's diameter = 1) 0·706 on the Northern limb.

The first contact with the Shadow occurs at 78° from the Northernmost point of the Moon's limb towards the East.

The last contact at 26° towards the West.

III.—*An Annular Eclipse of the SUN, Sept. 28, 1856, invisible at Greenwich.*

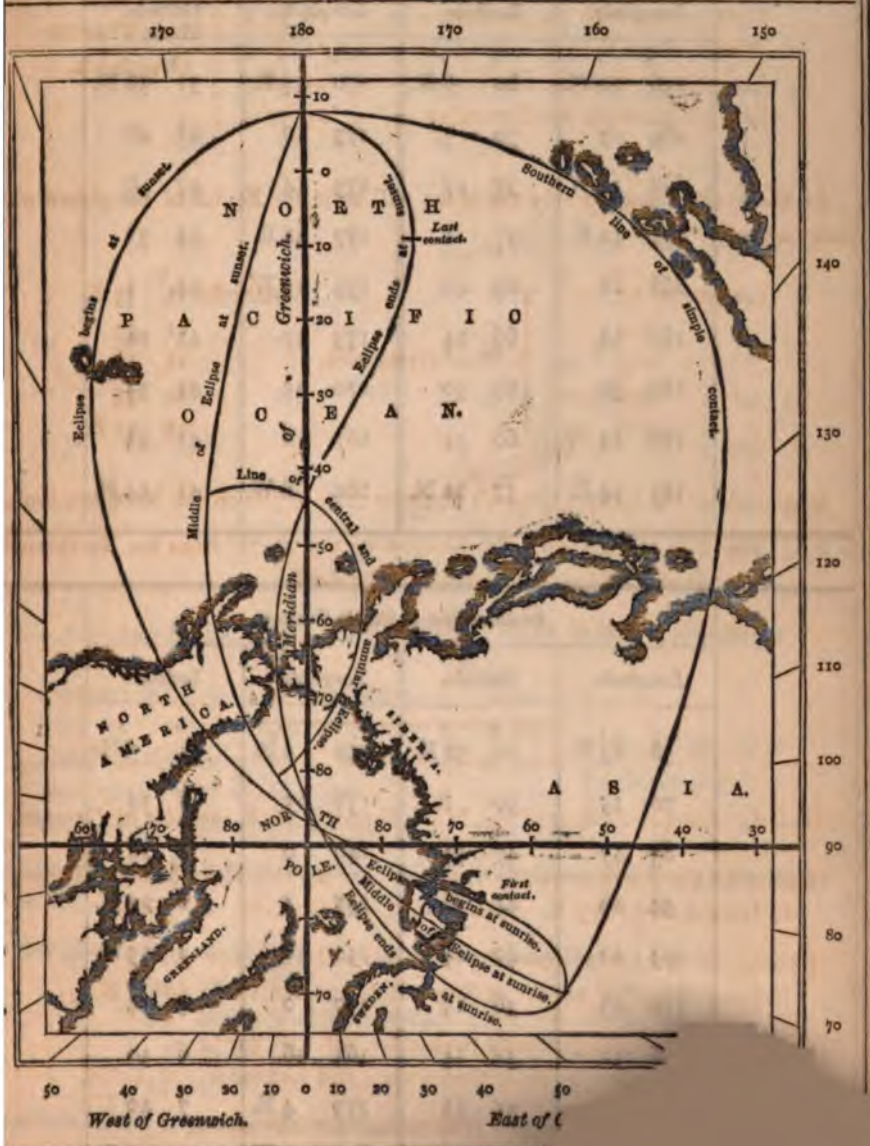
Begins on the Earth generally Sept. 28^d 13^h 29^m·7, Mean Time at Greenwich, in Longitude 70° 37' E. of Greenwich, and Latitude 65° 56' N.

Central Eclipse begins generally September 28^d 15^h 19^m·5, in Longitude 156° 20' W. of Greenwich, and Latitude 80° 6' N.

Central Eclipse ends generally September 28^d 16^h 38^m·2, in Longitude 164° 8' W. of Greenwich, and Latitude 41° 44' N.

Ends on the Earth generally September 28^d 18^h 28^m·0, in Longitude 170° 15' E. of Greenwich, and Latitude 7° 54' N.

PATH OF THE MOON'S PENUMBRA UPON THE SURFACE OF THE EARTH, DURING THE ANNULAR ECLIPSE OF THE SUN, SEPTEMBER 28, 1856.



The central and limiting lines of the Eclipse, in the preceding diagram, have been laid down from the following calculated positions :—

Line of Central and Annular Eclipse.			
Longitude.	Latitude.	Longitude.	Latitude.
156° 20' W.	80° 6' N.	170° 54' E.	51° 36' N.
169 7	79 3	173 20	48 46
178 14 W.	77 27	175 14	47 6
174 40 E.	75 1	177 34 E.	45 31
168 18	69 46	179 25 W.	44 1
166 58	66 24	173 47	42 22
166 39	63 30	170 25	41 53
166 54	60 54	167 26	41 43
167 54 E.	57 12 N.	164 8 W.	41 44 N.

Southern line of Simple Contact.			
Longitude.	Latitude.	Longitude.	Latitude.
58° 25' E.	50° 52' N.	132° 9' E.	14° 7' N.
70 15	50 1	135 25	8 54
83 47	47 43	140 0	4 18
94 29	44 36	145 1	0 29 N.
103 21	40 44	150 38	2 35 S.
110 43	36 15	157 0	4 54
116 51	31 14	164 16	6 30
122 6	25 43	173 4 E.	7 20
126 41 E.	19 56 N.	179 23 W.	7 22 S.

Eclipse begins at Sun-set.				Eclipse ends at Sun-rise.	
Longitude.	Latitude.	Longitude.	Latitude.	Longitude.	Latitude.
3° 57' W.	82° 59' N.	154° 2' W.	25° 31' N.	59° 7' E.	51° 0' N.
7 3	75 7	155 37	21 59	55 11	51 36
7 38	67 56	157 25	18 2	51 40	53 41
9 44	60 47	159 43	13 21	48 22	57 4
2 14	54 1	162 29	8 10	45 34	61 22
4 47	47 35	165 31	3 15 N.	43 23	66 12
7 17	41 29	168 50	1 5 S.	42 3	71 19
9 25	36 21	172 26	4 32	42 3	75 53
1 10	32 12	176 6 W.	6 38 S.	43 51	79 43
2 42 W.	28 34 N.			48 58	83 4
				62 5	85 48
				132 13 E.	87 28 N.

IV.—A Partial Eclipse of the MOON, Oct. 13, 1856, visible at Greenwich.

First contact with the Penumbra	- -	8 22.6	} Mean Time at Greenwich.
First contact with the Shadow	- -	9 21.1	
Middle of the Eclipse	- -	10 54.1	
Last contact with the Shadow	- -	12 27.1	
Last contact with the Penumbra	- -	13 25.6	

At these times respectively the Moon will be in the Zenith of the places whose latitudes are,

Longitude	49° 18' E.	} of Greenwich.	Latitude	7° 52' N.
	35 12			
	12 46 E.			
	9 39 W.			
	23 46 W.			

Magnitude of the Eclipse (Moon's diameter = 1)

in limb.

The first contact with the Shadow occurs

at the

point of the Moon's limb towards the East

The last contact at 146° towards the West

ELEMENTS OF THE ECLIPSES OF THE SUN.

1856.	April 4.	September 21.
Greenwich Mean Time of ☉ in R. A. - -	^{h m s} 17 16 52·3	^{h m s} 14 56 41·7
☉ and ☾'s Right Ascension - - - -	0 57 31·14	12 22 33·61
☾'s Declination - - - - -	^{° ' "} N. 5 14 24·0	^{° ' "} S. 1 28 26·9
☉'s Declination - - - - -	^{° ' "} N. 6 9 5·6	^{° ' "} S. 2 26 25·5
☾'s Horary Motion in R. A. - - - -	33 39·0	26 1·4
☉'s Horary Motion in R. A. - - - -	2 16·8	2 15·6
☾'s Horary Motion in Declination - - -	N. 17 44·8	S. 14 9·4
☉'s Horary Motion in Declination - - -	N. 56·9	S. 58·4
☾'s Equatorial Horizontal Parallax - - -	61 10·0	53 57·9
☉'s Equatorial Horizontal Parallax - - -	8·6	8·6
☾'s True Semidiameter - - - - -	16 40·1	14 42·3
☉'s True Semidiameter - - - - -	16 0·7	16 0·8

ELEMENTS OF THE ECLIPSES OF THE MOON.

1856.	April 19.	October 13.
Greenwich Mean Time of ☽ in R. A. - -	^{h m s} 21 41 38·7	^{h m s} 11 20 12·7
☉ and ☽'s Right Ascension - - - -	13 53 27·36	1 16 52·63
☽'s Declination - - - - -	^{° ' "} S. 12 15 58·4	^{° ' "} N. 8 41 16·2
☉'s Declination - - - - -	^{° ' "} N. 11 38 59·2	^{° ' "} S. 8 7 49·5
☽'s Horary Motion in R. A. - - - -	27 53·9	34 21·9
☉'s Horary Motion in R. A. - - - -	2 19·8	2 19·2
☽'s Horary Motion in Declination - - -	S. 13 9·3	N. 17 34·4
☉'s Horary Motion in Declination - - -	N. 0 51·0	S. 0 55·9
☽'s Equatorial Horizontal Parallax - - -	54 33·7	61 26·2
☉'s Equatorial Horizontal Parallax - - -	8·5	8·6
☽'s True Semidiameter - - - - -	14 52·1	16 44·5
☉'s True Semidiameter - - - - -	15 56·6	16 5·0

OCCULTATIONS OF PLANETS AND FIXED STARS BY THE MOON,
VISIBLE AT GREENWICH.

Day of the Month.	Star's Name.	Magnitude.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Ver- tex.			N. Point.	Ver- tex.
Jan. 12	27 Piscium - -	5	h m 1 16	h m 5 51	° ° 202 218	h m 1 34	h m 6 9	° ° 232 251		
12	29 Piscium - -	5	3 2	7 37	185 215	3 34	8 8	244 277		
14	54 Ceti - - -	6	7 22	11 48	177 216	7 48	12 13	230 269		
20	47 Geminorum	6	0 21	4 24	140 101	0 59	5 2	226 184		
21	λ Cancri - -	6	8 5	12 3	14 11	8 47	12 45	310 322		
26	γ Virginis - -	3½	14 26	18 3	62 86	15 38	19 15	229 260		
26	13 Virginis - -	6	14 35†	18 12	323 348					
Feb. 16	47 Geminorum	6	9 42	11 57	61 101	10 50	13 5	272 316		
17	ω Cancri - -	6	6 19	8 31	87 59	7 39	9 51	247 243		
24	h Virginis - -	6	17 13†	18 56	152 184					
27	B.A.C. 5254 - -	6	15 52	17 23	114 115	16 48	18 19	202 212		
Mar. 10	ρ Arietis - -	6	6 48	7 33	135 175	7 45	8 30	264 305		
10	ρ Arietis - -	6	7 1	7 46	58 97	7 39	8 24	341 21		
11	33 Tauri - - -	6	8 52	9 33	130 173	9 43	10 24	251 292		
13	136 Tauri - - -	4½	8 21	8 54	90 130	9 32	10 5	266 310		
15	ω Cancri - -	6	15 35†	15 59	165 199					
26	α Scorpii - -	1½	15 45	15 26	61 55	17 5	16 46	261 267		
27	43 Ophiuchi -	6	14 33	14 10	136 112	15 7	14 44	192 173		
31	35 Capricorni -	6	16 57†	16 18	115 80	18 1	17 22	280 251		
Apr. 17	13 Virginis - -	6	14 27	12 42	47 71	15 39	13 54	243 275		
17	η Virginis - -	3½	15 27	13 41	138 168	15 37	13 52	155 187		
May 8	47 Geminorum	6	12 58	9 50	68 111	13 52	10 44	267 305		
19	B.A.C. 5254 - -	6	15 57†	12 5	157 159					
19	B.A.C. 5253 - -	6	16 15	12 24	355 0	16 41	12 49	318 327		
23	b Sagittarii -	5	21 9†	17 2	18 30					
24	B.A.C. 7237 - -	6	19 21	15 9	101 87	20 37	16 25	301 300		
June 5	c Geminorum	6	13 39	8 41	94 136	14 29	9 31	235 273		
16	ε Scorpii - -	4	12 22†	6 41	101 69		38	212 186		
16	α Scorpii - -	1½	17 11	11 29	70 78		48	261 280		
17	43 Ophiuchi -	6	15 1	9 16	123 10		8	209 197		
20	B.A.C. 7077 - -	6	18 46	12 49	104		5	292 288		
23	ψ Aquarii - -	5½	18 12	12 3	128		4	287 282		
23	ψ Aquarii - -	5	19 30†	13 20	3					
26	54 Ceti - - -	6	20 0	13 39	1		14	2		
July 6	l Leonis - - -	6	17 7†	10 7	1					
22	JUPITER - - -	-	20 18†	12 14						

OCCULTATIONS OF PLANETS AND FIXED STARS BY THE MOON
VISIBLE AT GREENWICH.

Day of the Month.	Star's Name.	Magnitude.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle	
					N. Point.	Ver- tex.				
July 25	τ^3 Arietis - -	6	^{h m} 20 48	^{h m} 12 32	^o 189	^o 151	^{h m} 21 1	^{h m} 12 45	^o 219	
25	65 Arietis - -	6	21 11	12 55	151	111	21 55	13 39	259	
Aug. 10	α Scorpii - -	1½	13 31	4 14	106	81	14 30	5 13	210	
15	ϵ Capricorni -	5	18 44†	9 6	202	177				
15	κ Capricorni -	5	21 55†	12 16	209	213				
21	δ Arietis - -	4	23 9	13 7	66	26	23 48	13 45	352	
25	47 Geminorum	6	1 19	15 1	35	352	1 51	15 33	329	
Sept. 8	γ^1 Sagittarii -	4	16 46	5 34	36	26	17 40	6 28	314	
13	χ Aquarii - -	5½	4 7	16 34	189	226	4 28*	16 55	234	
17	40 Arietis - -	6	23 31	11 42	182	145	0 1	12 13	240	
20	136 Tauri - -	4½	1 14	13 14	30	345	1 34	13 34	353	
22	c Geminorum	6	22 38†	10 30	62	35	23 23	11 15	291	
Oct. 9	κ Capricorni -	5	22 10†	8 55	210	216				
15	δ Arietis - -	4	20 10	6 32	78	41	20 50	7 12	331	
15	τ^1 Arietis - -	5	0 31	10 52	143	107	1 31	11 52	273	
15	τ^3 Arietis - -	6	1 28†	11 50	28	1				
18	49 Aurigæ - -	6	2 59	13 8	101	58	4 9	14 18	268	
18	54 Aurigæ - -	6	5 35	15 44	161	141	5 59	16 8	197	
Nov. 5	33 Capricorni -	6	23 20	8 19	102	122	0 24	9 23	317	
7	χ Aquarii - -	5½	4 4	12 55	170	207	4 42†	13 32	257	
8	JUPITER - -	--	4 29	13 15	204	240	4 37	13 24	22	
11	40 Arietis - -	6	0 39	9 15	151	123	1 36	10 11	27	
14	136 Tauri - -	4½	22 26	6 49	105	68	23 17	7 40	273	
16	ω^1 Cancri - -	6	0 37†	8 53	176	139				
16	λ Cancri - -	6	10 14	18 28	50	82	11 21	19 35	265	
19	1 Leonis - -	6	9 50	17 53	105	93	10 40	18 42	182	
Dec. 3	29 Aquarii - -	6	0 41	7 50	72	97	1 23	8 31	352	
9	δ Arietis - -	4	21 25	4 11	48	8	21 46	4 31	35	
9	τ^1 Arietis - -	5	1 56	8 41	115	94	3 6	9 51	298	
11	136 Tauri - -	4½	12 59	19 34	108	145	13 44	20 19	245	
12	49 Aurigæ - -	6	3 12	9 45	176	133	3 22	9 55	193	
13	c Geminorum	6	6 2	12 31	35	7	6 56	13 25	303	
16	37 Leonis - -	6	2 24†	8 42	27	353	3 2	9 20	296	
30	κ Capricorni -	5	22 28	3 51	82	91	23 23	4 46	341	

† A near approach.

‡ Star below the horizon.

* Star setting.

JUPITER'S SATELLITES.

MEAN TIME.

JANUARY.

	d	h	m	s		d	h	m	s
lt. Disapp.	1	1	35		I. Shadow Ingress *	7	7	12	
se Reapp. †		4	53	42.4	I. Transit Egress		8	34	
sit Ingress		12	6		I. Shadow Egress		9	31	
sit Egress		15	45		II. Occult. Disapp.		17	14	
low Ingress		16	18		II. Eclipse Reapp.		22	1	11.5
low Egress		19	51		I. Occult. Disapp.	8	3	36	
sit Ingress		22	44		I. Eclipse Reapp. *		6	48	59.0
low Ingress		23	45		III. Transit Ingress		16	31	
sit Egress	2	1	3		III. Transit Egress		20	10	
low Egress		2	4		III. Shadow Ingress		20	20	
sit Ingress		9	38		III. Shadow Egress		23	53	
low Ingress		11	42		I. Transit Ingress	9	0	45	
sit Egress		12	34		I. Shadow Ingress		1	41	
low Egress		14	36		I. Transit Egress		3	4	
lt. Disapp.		20	5		I. Shadow Egress		4	0	
se Reapp.		23	22	35.1	II. Transit Ingress		12	26	
sit Ingress	3	17	14		II. Shadow Ingress		14	19	
low Ingress		18	14		II. Transit Egress		15	22	
sit Egress		19	34		II. Shadow Egress		17	13	
low Egress		20	33		I. Occult. Disapp.		22	6	
lt. Disapp.		21	36		I. Eclipse Reapp.	10	1	17	50.3
lt. Reapp.	4	2	21		I. Transit Ingress		19	15	
lt. Disapp.		3	49		I. Shadow Ingress		20	10	
se Disapp. *		7	18	37.3	I. Transit Egress		21	35	
se Reapp.		8	42	39.0	I. Shadow Egress		22	29	
se Reapp.		11	26	4.3	II. Occult. Disapp. *	11	6	39	
lt. Disapp.		14	35		II. Eclipse Reapp.		11	20	20.0
se Reapp.		17	51	22.1	I. Occult. Disapp.		16	36	
lt. Disapp.	5	2	12		I. Eclipse Reapp.		19	46	36.2
lt. Reapp. *		5	51		III. Occult. Disapp. *	12	6	37	
se Disapp. *		6	18	27.7	IV. Transit Ingress		9	40	
se Reapp.		9	41	9.6	III. Occult. Reapp.		10	16	
sit Ingress		11	44		III. Eclipse Disapp.		10	20	4.4
low Ingress		12	43		III. Eclipse Reapp.		13	42	7.8
sit Egress		14	4		I. Transit Ingress		13	45	
low Egress		15	2		IV. Transit Egress		14		
sit Ingress		23	2		I. Shadow Ingress		14		
low Ingress	6	1	0		I. Transit Egress				
sit Egress		1	58		I. Shadow Egress				
low Egress		3	55		IV. Shadow Ingress				
lt. Disapp.		9	5		IV. Shadow Egress				
se Reapp.		12	20	12.2	II. Transit Ingress				
sit Ingress *	7	6	14		II. Shadow Ingress				

JUPITER'S SATELLITES.

MEAN TIME.

JANUARY.

		d	h	m	a			d	h	m
II. Transit	Egress †	13	4	47		II. Shadow	Egress	20	9	8
II. Shadow	Egress *		6	32		I. Occult.	Disapp.		13	8
I. Occult.	Disapp.		11	7		I. Eclipse	Reapp.		16	10 31
I. Eclipse	Reapp.		14	15	24.6	IV. Occult.	Disapp.		18	8
I. Transit	Ingress	14	8	16		IV. Occult.	Reapp.		22	48
I. Shadow	Ingress		9	7		IV. Eclipse	Disapp.	21	1	36 24
I. Transit	Egress		10	35		IV. Eclipse	Reapp. *		5	38
I. Shadow	Egress		11	26		I. Transit	Ingress		10	17
II. Occult.	Disapp.		20	3		I. Shadow	Ingress		11	3
II. Eclipse	Reapp.	15	0	38	53.1	I. Transit	Egress		12	37
I. Occult.	Disapp. *		5	37		I. Shadow	Egress		13	22
I. Eclipse	Reapp.		8	44	10.1	II. Occult.	Disapp.		22	54
III. Transit	Ingress		20	58		II. Eclipse	Reapp.	22	3	16 35
III. Shadow	Ingress	16	0	22		I. Occult.	Disapp.		7	38
III. Transit	Egress		0	37		I. Eclipse	Reapp.		10	39 15
I. Transit	Ingress		2	46		III. Transit	Ingress	23	1	27
I. Shadow	Ingress		3	36		III. Shadow	Ingress		4	25
III. Shadow	Egress		3	55		I. Transit	Ingress †		4	48
I. Transit	Egress †		5	6		III. Transit	Egress †		5	5
I. Shadow	Egress *		5	55		I. Shadow	Ingress *		5	32
II. Transit	Ingress		15	15		I. Transit	Egress †		7	8
II. Shadow	Ingress		16	55		I. Shadow	Egress		7	51
II. Transit	Egress		18	11		III. Shadow	Egress		7	57
II. Shadow	Egress		19	50		II. Transit	Ingress		18	5
I. Occult.	Disapp.	17	0	7		II. Shadow	Ingress		19	32
I. Eclipse	Reapp.		3	12	59.8	II. Transit	Egress		21	0
I. Transit	Ingress		21	17		II. Shadow	Egress		22	26
I. Shadow	Ingress		22	5		I. Occult.	Disapp.	24	2	9
I. Transit	Egress		23	36		I. Eclipse	Reapp. †		5	8 3
I. Shadow	Egress	18	0	24		I. Transit	Ingress		23	19
II. Occult.	Disapp.		9	29		I. Shadow	Ingress	25	0	1
II. Eclipse	Reapp.		13	58	6.2	I. Transit	Egress		1	38
I. Occult.	Disapp.		18	38		I. Shadow	Egress		2	19
I. Eclipse	Reapp.		21	41	44.4	II. Occult.	Disapp.		12	20
III. Occult.	Disapp.	19	11	5		II. Eclipse	Reapp.		16	35 56
I. Transit	Ingress		15	47		I. Occult.	Disapp.		20	39
I. Shadow	Ingress		16	34		I. Eclipse	Reapp.		23	36 46
III. Eclipse	Reapp.		17	43	7.2	III. Occult.	Disapp.	26	15	34
I. Transit	Egress		18	7		I. Transit	Ingress		17	49
I. Shadow	Egress		18	53		I. Shadow	Ingress		18	29
II. Transit	Ingress †	20	4	40		I. Transit	Egress		20	9
II. Shadow	Ingress *		6	14		I. Shadow	Egress		20	48
II. Transit	Egress †		7	36		III. Eclipse	Reapp.		21	44 8

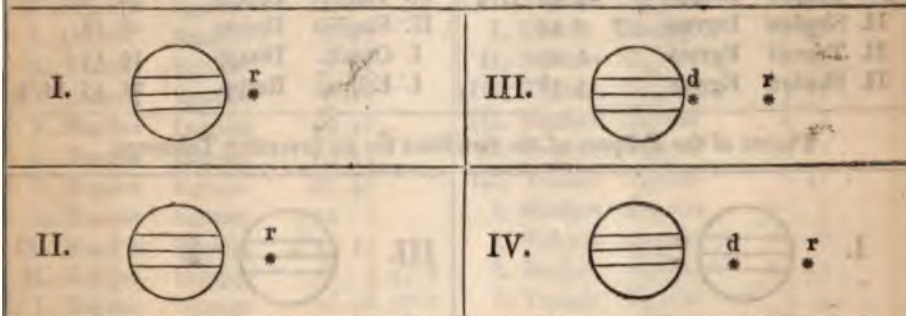
JUPITER'S SATELLITES.

MEAN TIME.

JANUARY.

				d	h	m	s					d	h	m	s
II. Transit	Ingress			27	7	30		I. Eclipse	Reapp.			29	12	34	14.3
II. Shadow	Ingress				8	50		IV. Shadow	Egress				16	39	
II. Transit	Egress				10	25		III. Transit	Ingress *			30	5	56	
II. Shadow	Egress				11	44		I. Transit	Ingress †				6	50	
I. Occult.	Disapp.				15	10		I. Shadow	Ingress				7	27	
I. Eclipse	Reapp.			18	5	31.7		III. Shadow	Ingress				8	26	
I. Transit	Ingress			28	12	20		I. Transit	Egress				9	10	
I. Shadow	Ingress				12	58		III. Transit	Egress				9	34	
I. Transit	Egress				14	39		I. Shadow	Egress				9	46	
I. Shadow	Egress				15	17		III. Shadow	Egress				11	58	
II. Occult.	Disapp.			29	1	45		II. Transit	Ingress				20	55	
II. Eclipse	Reapp. *				5	54.29.7		II. Shadow	Ingress				22	8	
IV. Transit	Ingress †				6	22		II. Transit	Egress				23	50	
I. Occult.	Disapp.				9	40		II. Shadow	Egress			31	1	2	
IV. Transit	Egress				10	59		I. Occult.	Disapp.				4	11	
IV. Shadow	Ingress				12	26		I. Eclipse	Reapp. †				7	3	0.7

Phases of the Eclipses of the Satellites for an inverting Telescope.



FEBRUARY.

				d	h	m	s					d	h	m	s
I. Transit	Ingress			1	1	21		I. Transit	Egress			2	22	11	
I. Shadow	Ingress				1	56		I. Shadow	Egress				22	44	
I. Transit	Egress				3	40		III. Eclipse	Reapp.			3	1	45.42.0	
I. Shadow	Egress				4	15		II. Transit	Ingress				10	20	
II. Occult.	Disapp.				15	12		II. Shadow	Ingress				11	26	
II. Eclipse	Reapp.			19	13	50.5		II. Transit	Egress				13	15	
I. Occult.	Disapp.				22	42		II. Shadow	Egress				14	20	
I. Eclipse	Reapp.			2	1	31.42.7		I. Occult.	Disapp.				17	12	
I. Transit	Ingress				19	52		I. Eclipse	Reapp.				20	0	26.1
III. Occult.	Disapp.				20	4		I. Transit	Ingress				4	14	22
I. Shadow	Ingress				20	25		I. Shadow	Ingress				14	54	

JUPITER'S SATELLITES.

MEAN TIME.

FEBRUARY.

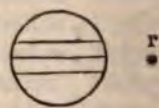
		d	h	m	s			d	h	m	s
I. Transit	Egress	4	16	42		I. Occult.	Disapp. †	7	6	13	
I. Shadow	Egress		17	12		I. Eclipse	Reapp.		8	57	51.8
II. Occult.	Disapp.	5	4	38		I. Transit	Ingress	8	3	23	
II. Eclipse	Reapp.		8	32	23.1	I. Shadow	Ingress		3	51	
I. Occult.	Disapp.		11	43		I. Transit	Egress †		5	43	
I. Eclipse	Reapp.		14	29	7.2	I. Shadow	Egress †		6	10	
I. Transit	Ingress	6	8	53		II. Occult.	Disapp.		18	4	
I. Shadow	Ingress		9	23		II. Eclipse	Reapp.		21	51	47.1
III. Transit	Ingress		10	27		I. Occult.	Disapp.	9	0	44	
I. Transit	Egress		11	12		I. Eclipse	Reapp.		3	26	32.7
I. Shadow	Egress		11	41		I. Transit	Ingress		21	54	
III. Shadow	Ingress		12	28		I. Shadow	Ingress		22	20	
III. Transit	Egress		14	4		I. Transit	Egress	10	0	13	
IV. Occult.	Disapp.		15	0		III. Occult.	Disapp.		0	36	
III. Shadow	Egress		15	59		I. Shadow	Egress		0	39	
IV. Occult.	Reapp.		19	34		III. Eclipse	Reapp. †		5	46	42.7
IV. Eclipse	Disapp.		19	53	34.5	II. Transit	Ingress		13	11	
II. Transit	Ingress		23	45		II. Shadow	Ingress		14	2	
IV. Eclipse	Reapp.		23	48	57.7	II. Transit	Egress		16	6	
II. Shadow	Ingress	7	0	44		II. Shadow	Egress		16	56	
II. Transit	Egress		2	40		I. Occult.	Disapp.		19	14	
II. Shadow	Egress		3	38		I. Eclipse	Reapp.		21	55	14.4

Phases of the Eclipses of the Satellites for an inverting Telescope.

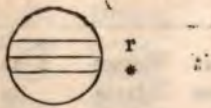
I.



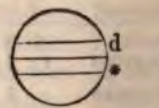
III.



II.



IV.



THE SATELLITES OF JUPITER

ARE INVISIBLE FROM THE 10TH DAY OF FEBRUARY UNTIL THE 1ST DAY OF APRIL,

JUPITER BEING TOO NEAR TO THE SUN.

JUPITER'S SATELLITES.

MEAN TIME.

APRIL.

		d	h	m	s			d	h	m	s
III. Eclipse	Disapp.	14	14	38	46.8	I. Occult.	Reapp.	21	17	49	
II. Transit	Ingress		14	44		III. Eclipse	Disapp.	18	39	21.1	
I. Occult.	Reapp.		15	48		II. Shadow	Egress	18	46		
II. Shadow	Egress		16	11		II. Transit	Egress	20	24		
II. Transit	Egress		17	36		III. Eclipse	Reapp.	21	50	53.1	
III. Occult.	Reapp.		20	45		III. Occult.	Disapp.	21	51		
I. Shadow	Ingress	15	10	4		III. Occult.	Reapp.	22	1	11	
I. Transit	Ingress		10	47		IV. Shadow	Ingress		7	52	
I. Shadow	Egress		12	22		IV. Shadow	Egress		11	29	
I. Transit	Egress		13	4		I. Shadow	Ingress		11	59	
I. Eclipse	Disapp.	16	7	20	3.0	I. Transit	Ingress		12	48	
II. Eclipse	Disapp.		8	2	10.2	I. Shadow	Egress		14	17	
I. Occult.	Reapp.		10	18		I. Transit	Egress		15	5	
II. Occult.	Reapp.		12	21		IV. Transit	Ingress		15	38	
I. Shadow	Ingress	17	4	33		IV. Transit	Egress		19	5	
I. Transit	Ingress		5	17		I. Eclipse	Disapp.	23	9	14	2.6
I. Shadow	Egress		6	51		II. Eclipse	Disapp.	10	39	54.8	
I. Transit	Egress		7	35		I. Occult.	Reapp.		12	19	
I. Eclipse	Disapp.	18	1	48	33.6	II. Occult.	Reapp.		15	12	
II. Shadow	Ingress		2	36		I. Shadow	Ingress	24	6	28	
II. Transit	Ingress		4	8		I. Transit	Ingress		7	18	
III. Shadow	Ingress		4	44		I. Shadow	Egress		8	45	
I. Occult.	Reapp.		4	49		I. Transit	Egress		9	36	
II. Shadow	Egress		5	29		I. Eclipse	Disapp.	25	3	42	32.2
II. Transit	Egress		7	0		II. Shadow	Ingress		5	11	
III. Transit	Ingress		7	48		I. Occult.	Reapp.		6	49	
III. Shadow	Egress		8	8		II. Transit	Ingress		6	56	
III. Transit	Egress		11	9		II. Shadow	Egress		8	3	
I. Shadow	Ingress		23	2		III. Shadow	Ingress		8	45	
I. Transit	Ingress		23	47		II. Transit	Egress		9	47	
I. Shadow	Egress	19	1	19		III. Shadow	Egress		12	8	
I. Transit	Egress		2	5		III. Transit	Ingress		12	15	
I. Eclipse	Disapp.		20	17	4.7	III. Transit	Egress		15	35	
II. Eclipse	Disapp.		21	21	36.7	I. Shadow	Ingress	26	0	56	
I. Occult.	Reapp.		23	19		I. Transit	Ingress		1	48	
II. Occult.	Reapp.	20	1	46		I. Shadow	Egress		3	14	
I. Shadow	Ingress		17	30		I. Transit	Egress		4	6	
I. Transit	Ingress		18	18		I. Eclipse	Disapp.	22	11	2.6	
I. Shadow	Egress		19	48		II. Eclipse	Disapp.	23	59	17.8	
I. Transit	Egress		20	35		I. Occult.	Reapp.	27	1	19	
I. Eclipse	Disapp.	21	14	45	33.5	II. Occult.	Reapp.		4	37	
II. Shadow	Ingress †		15	54		I. Shadow	Ingress		19	25	
II. Transit	Ingress		17	32		I. Transit	Ingress		20	19	



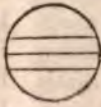

JUPITER'S SATELLITES.

MEAN TIME.

APRIL.

		d	h	m	s			d	h	m	s
I. Shadow	Egress	27	21	43		III. Occult.	Reapp.	29	5	36	
I. Transit	Egress		22	36		I. Shadow	Ingress		13	53	
I. Eclipse	Disapp.	28	16	39	30.6	I. Transit	Ingress		14	49	
II. Shadow	Ingress		18	28		I. Shadow	Egress †		16	11	
I. Occult.	Reapp.		19	49		I. Transit	Egress		17	6	
II. Transit	Ingress		20	19		I. Eclipse	Disapp.	30	11	7	58.9
II. Shadow	Egress		21	20		II. Eclipse	Disapp.		13	17	33.5
III. Eclipse	Disapp.		22	40	3.3	I. Occult.	Reapp.		14	19	
II. Transit	Egress		23	11		IV. Eclipse	Disapp.		15	20	10.2
III. Eclipse	Reapp.	29	1	50	44.0	II. Occult.	Reapp.		18	1	
III. Occult.	Disapp.		2	17		IV. Eclipse	Reapp.		18	36	1.6

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.	d		III.	d	
II.	d		IV.	d r	

MAY.

IV. Occult.	Disapp.	1	0	13		I. Shadow	Ingress	3	2	51	
IV. Occult.	Reapp.		3	28		I. Transit	Ingress		3	49	
I. Shadow	Ingress		8	22		I. Shadow	Egress		5	8	
I. Transit	Ingress		9	19		I. Transit	Egress		6	6	
I. Shadow	Egress		10	40		I. Eclipse	Disapp.	4	0	4	57.3
I. Transit	Egress		11	36		II. Eclipse	Disapp.		2	36	52.4
I. Eclipse	Disapp.	2	5	36	27.4	alt.	Reapp.		3	18	
II. Shadow	Ingress		7	46		Reapp.			7	26	
I. Occult.	Reapp.		8	48		Ingress			21	19	
II. Transit	Ingress		9	41		Egress			22	19	
II. Shadow	Egress					Ingress			23	37	
II. Transit	Egress					Egress		5	0	36	
III. Shadow	Ingress					Ingress			18	33	24.5
III. Shadow	Egress †					Egress			21	3	
III. Transit	Ingress					Egress			21	48	
III. Transit	Egress					Egress			23	6	

JUPITER'S SATELLITES.

MEAN TIME.

MAY.

		d	h	m	s			d	h	m
II. Shadow	Egress	5	23	55		I. Transit	Egress	12	2	35
II. Transit	Egress	6	1	56		I. Eclipse	Disapp.	20	27	11
III. Eclipse	Disapp.	2	40	48.8		II. Shadow	Ingress	23	37	
III. Eclipse	Reapp.	5	50	37.7		I. Occult.	Reapp.	23	47	
III. Occult.	Disapp.	6	43			II. Transit	Ingress	13	1	51
III. Occult.	Reapp.	9	59			II. Shadow	Egress	2	29	
I. Shadow	Ingress †	15	48			II. Transit	Egress	4	41	
I. Transit	Ingress	16	49			III. Eclipse	Disapp.	6	42	10
I. Shadow	Egress	18	6			III. Eclipse	Reapp.	9	51	10
I. Transit	Egress	19	6			III. Occult.	Disapp.	11	6	
I. Eclipse	Disapp.	7	13	1	52.3	III. Occult.	Reapp.	14	20	
II. Eclipse	Disapp. †	15	55	5.4		I. Shadow	Ingress	17	42	
I. Occult.	Reapp. †	16	18			I. Transit	Ingress	18	49	
II. Occult.	Reapp.	20	50			I. Shadow	Egress	20	0	
I. Shadow	Ingress	8	10	17		I. Transit	Egress	21	5	
I. Transit	Ingress	11	19			I. Eclipse	Disapp. †	14	14	55.4
I. Shadow	Egress	12	34			I. Occult.	Reapp.	18	17	
I. Transit	Egress	13	36			II. Eclipse	Disapp.	18	32	30
IV. Shadow	Ingress	9	2	8		II. Occult.	Reapp.	23	37	
IV. Shadow	Egress	5	37			I. Shadow	Ingress	15	12	11
I. Eclipse	Disapp.	7	30	19.8		I. Transit	Ingress	13	19	
II. Shadow	Ingress	10	20			I. Shadow	Egress †	14	28	
I. Occult.	Reapp.	10	48			I. Transit	Egress †	15	35	
IV. Transit	Ingress	12	14			I. Eclipse	Disapp.	16	9	24.10
II. Transit	Ingress	12	29			I. Occult.	Reapp.	12	47	
II. Shadow	Egress	13	12			II. Shadow	Ingress	12	55	
IV. Transit	Egress †	15	15			II. Transit	Ingress †	15	14	
II. Transit	Egress †	15	19			II. Shadow	Egress †	15	46	
III. Shadow	Ingress	16	48			II. Transit	Egress	18	3	
III. Shadow	Egress	20	9			III. Shadow	Ingress	20	48	
III. Transit	Ingress	21	6			III. Shadow	Egress	17	0	9
III. Transit	Egress	10	0	21		III. Transit	Ingress	1	28	
I. Shadow	Ingress	4	45			III. Transit	Egress	4	41	
I. Transit	Ingress	5	49			I. Shadow	Ingress	6	40	
I. Shadow	Egress	7	3			I. Transit	Ingress	7	49	
I. Transit	Egress	8	6			I. Shadow	Egress	8	57	
I. Eclipse	Disapp.	11	1	58	49.4	IV. Eclipse	Disapp.	9	37	30
II. Eclipse	Disapp.	5	14	19.8		I. Transit	Egress	10	5	
I. Occult.	Reapp.	5	17			IV. Eclipse	Reapp.	12	43	28
II. Occult.	Reapp.	10	14			IV. Occult.	Disapp.	20	40	
I. Shadow	Ingress	23	14			IV. Occult.	Reapp.	23	25	
I. Transit	Ingress	12	0	19		I. Eclipse	Disapp.	18	3	52.39
I. Shadow	Egress	1	31			I. Occult.	Reapp.	7	16	

JUPITER'S SATELLITES.

MEAN TIME.

MAY.

		d	h	m	s			d	h	m	s
II. Eclipse	Disapp.	18	7	51	39	0	I. Occult.	Reapp.	25	9	14
II. Occult.	Reapp.	13	1				II. Eclipse	Disapp.	10	28	49
I. Shadow	Ingress	19	1	8			II. Occult.	Reapp. †	15	46	
I. Transit	Ingress		2	18			IV. Shadow	Ingress	20	26	
I. Shadow	Egress		3	26			IV. Shadow	Egress	23	45	
I. Transit	Egress		4	35			I. Shadow	Ingress	26	3	2
I. Eclipse	Disapp.		22	21	5	0	I. Transit	Ingress		4	17
I. Occult.	Reapp.	20	1	46			I. Shadow	Egress		5	20
II. Shadow	Ingress		2	12			I. Transit	Egress		6	33
II. Transit	Ingress		4	36			IV. Transit	Ingress		8	28
II. Shadow	Egress		5	4			IV. Transit	Egress	10	53	
II. Transit	Egress		7	25			I. Eclipse	Disapp.	27	0	14
III. Eclipse	Disapp.		10	43	1	0	I. Occult.	Reapp.		3	43
III. Eclipse	Reapp.		13	51	3	5	II. Shadow	Ingress		4	47
III. Occult.	Disapp. †		15	27			II. Transit	Ingress		7	19
III. Occult.	Reapp.		18	38			II. Shadow	Egress		7	38
I. Shadow	Ingress		19	37			II. Transit	Egress		10	8
I. Transit	Ingress		20	48			III. Eclipse	Disapp. *	14	44	2
I. Shadow	Egress		21	54			III. Eclipse	Reapp.	17	51	10
I. Transit	Egress		23	4			III. Occult.	Disapp.		19	46
I. Eclipse	Disapp.	21	16	49	32	2	I. Shadow	Ingress		21	31
I. Occult.	Reapp.		20	15			I. Transit	Ingress		22	46
II. Eclipse	Disapp.	21	9	46	4		III. Occult.	Reapp.		22	54
II. Occult.	Reapp.	22	2	23			I. Shadow	Egress		23	48
I. Shadow	Ingress †		14	5			I. Transit	Egress	28	1	3
I. Transit	Ingress †		15	18			I. Eclipse	Disapp.		18	43
I. Shadow	Egress		16	23			I. Occult.	Reapp.		22	13
I. Transit	Egress		17	34			II. Eclipse	Disapp.		23	46
I. Eclipse	Disapp.	23	11	17	58	4	II. Occult.	Reapp.	29	5	8
I. Occult.	Reapp. †		14	45			I. Shadow	Ingress		16	0
II. Shadow	Ingress †		15	29			I. Transit	Ingress		17	16
II. Transit	Ingress		17	58			I. Shadow	Egress		18	17
II. Shadow	Egress		18	21			I. Transit	Egress		19	32
II. Transit	Egress		20	47			I. Eclipse	Disapp.	30	13	11
III. Shadow	Ingress	24	0	49			I. Occult.	Reapp.		16	42
III. Shadow	Egress		4	9			II. Shadow	Ingress		18	4
III. Transit	Ingress		5	38			II. Transit	Ingress		20	40
I. Shadow	Ingre						Shadow	Egress		20	55
III. Transit	Egre						Transit	Egress		23	29
I. Transit	Ingr						Shadow	Ingress	31	4	50
I. Shadow	Egre						Egress			8	9
I. Transit	Egr						Ingress			10	5
I. Eclipse	Di						Egress			10	28

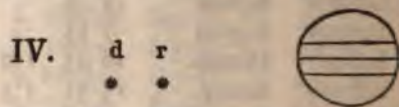
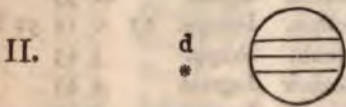
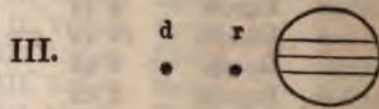
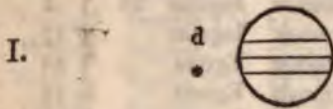
JUPITER'S SATELLITES.

MEAN TIME.

MAY.

I. Transit	Ingress	d	h	m	s	III. Transit	Egress	d	h	m
I. Shadow	Egress	31	11	45		I. Transit	Egress †	31	13	13
									14	1

Phases of the Eclipses of the Satellites for an inverting Telescope.



JUNE.

I. Eclipse	Disapp.	d	h	m	s	III. Occult.	Reapp.	d	h	m
I. Occult.	Reapp.	1	7	40	14'4	I. Eclipse	Disapp.	4	3	7
II. Eclipse	Disapp.					I. Occult.	Reapp.	20	37	6
II. Occult.	Reapp.	13	5	51	8	II. Eclipse	Disapp.	5	0	10
I. Shadow	Ingress	18	30			II. Occult.	Reapp.	2	23	53
I. Transit	Ingress	2	4	57		I. Shadow	Ingress	7	51	
I. Shadow	Egress	6	15			I. Transit	Ingress	17	54	
I. Transit	Egress	7	14			I. Shadow	Egress	19	13	
I. Eclipse	Disapp.	8	31			I. Transit	Egress	20	11	
IV. Eclipse	Disapp.	3	2	8	39'6	I. Eclipse	Disapp. †	21	29	
I. Occult.	Reapp.	3	55	3	7	I. Occult.	Reapp.	6	15	5
IV. Eclipse	Reapp.	5	41			II. Shadow	Ingress	18	59	
II. Shadow	Ingress	6	50	19	2	II. Transit	Ingress	20	39	
II. Transit	Ingress	7	22			II. Shadow	Egress	23	22	
II. Shadow	Egress	10	1			II. Transit	Egress	23	30	
II. Transit	Egress	10	13			III. Shadow	Ingress	7	2	9
IV. Occult.	Disapp.	12	49			III. Shadow	Egress	8	52	
III. Eclipse	Disapp.	16	39			I. Shadow	Ingress	12	22	
IV. Occult.	Reapp.	18	44	31	4	I. Transit	Ingress †	12	22	
III. Eclipse	Reapp.	18	45			III. Transit	Ingress *	13	43	
I. Shadow	Ingress	21	50	44	2	I. Shadow	Egress †	14	20	
III. Occult.	Disapp.	23	25			I. Transit	Egress	14	40	
I. Transit	Ingress	4	0	1		III. Transit	Egress	15	58	
I. Shadow	Egress	0	44			I. Eclipse	Disapp.	17	25	
I. Transit	Egress	1	43			I. Occult.	Reapp. †	8	9	34
		3	0					13	8	

JUPITER'S SATELLITES.

MEAN TIME.

JUNE.




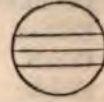
		d	h	m	s			d	h	m	s
II. Shadow	Egress	21	4	39		I. Occult.	Reapp.	26	5	56	
II. Transit	Egress		7	26		II. Eclipse	Disapp.		10	13	55
I. Shadow	Ingress		16	11		II. Eclipse	Reapp. *		12	59	43
III. Shadow	Ingress		16	54		II. Occult.	Disapp. *		13	3	
I. Transit	Ingress		17	35		II. Occult.	Reapp.		15	49	
I. Shadow	Egress		18	28		I. Shadow	Ingress		23	36	
I. Transit	Egress		19	50		I. Transit	Ingress	27	1	1	
III. Shadow	Egress		20	10		I. Shadow	Egress		1	53	
III. Transit	Ingress		22	38		I. Transit	Egress		3	16	
III. Transit	Egress	22	1	38		I. Eclipse	Disapp.		20	46	53
I. Eclipse	Disapp. *		13	21	34.9	I. Occult.	Reapp.	28	0	24	
I. Occult.	Reapp.		16	59		II. Shadow	Ingress		4	24	
II. Eclipse	Disapp.		20	56	2.2	II. Shadow	Egress		7	14	
II. Eclipse	Reapp.		23	42	1.1	II. Transit	Ingress		7	15	
II. Occult.	Disapp.		23	44		IV. Shadow	Ingress		9	0	
II. Occult.	Reapp.	23	2	31		II. Transit	Egress		10	2	
I. Shadow	Ingress		10	39		IV. Shadow	Egress †		11	57	
I. Transit	Ingress		12	4		I. Shadow	Ingress		18	5	
I. Shadow	Egress †		12	56		I. Transit	Ingress		19	29	
I. Transit	Egress *		14	19		I. Shadow	Egress		20	22	
I. Eclipse	Disapp.	24	7	50	0.2	III. Shadow	Ingress		20	54	
I. Occult.	Reapp.		11	27		I. Transit	Egress		21	44	
II. Shadow	Ingress †		15	6		III. Shadow	Egress	29	0	9	
II. Shadow	Egress		17	57		III. Transit	Ingress		2	42	
II. Transit	Ingress		17	57		III. Transit	Egress		5	39	
II. Transit	Egress		20	44		I. Eclipse	Disapp. †		15	13	23
I. Shadow	Ingress	25	5	8		I. Occult.	Reapp.		18	53	
I. Transit	Ingress		6	32		II. Eclipse	Disapp.		23	32	26
III. Eclipse	Disapp.		6	46	15.8	II. Eclipse	Reapp.	30	2	18	31
I. Shadow	Egress		7	25		II. Occult.	Disapp.		2	21	
I. Transit	Egress		8	47		II. Occult.	Reapp.		5	7	
III. Eclipse	Reapp.		9	49	38.8	I. Shadow	Ingress †		12	33	
III. Occult.	Disapp. †		12	27		I. Transit	Ingress *		13	58	
III. Occult.	Reapp. †		15	26		I. Shadow	Egress †		14	50	
I. Eclipse	Disapp.	26	2	18	27.9	I. Transit	Egress		16	13	

JUPITER'S SATELLITES.

MEAN TIME.

JUNE.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.	d •		III.	d r • •	
II.	d •		IV.	d r • •	

JULY.

		d	h	m	s		d	h	m	s
I. Eclipse	Disapp.	1	9	43	49	I.	5	9	50	
I. Occult.	Reapp. *		13	21		II. Transit		12	35	
II. Shadow	Ingress		17	42		I. Shadow		19	59	
II. Shadow	Egress		20	32		I. Transit		21	23	
II. Transit	Ingress		20	33		I. Shadow		22	16	
II. Transit	Egress		23	18		I. Transit		23	38	
I. Shadow	Ingress	2	7	2		III. Shadow	6	0	55	
I. Transit	Ingress		8	26		III. Shadow		4	9	
I. Shadow	Egress		9	19		III. Transit		6	41	
I. Transit	Egress		10	41		III. Transit		9	36	
III. Eclipse	Disapp.		10	47	38.8	IV. Eclipse		16	32	11.2
III. Eclipse	Reapp. *		13	50	4.3	I. Eclipse		17	9	14.2
III. Occult.	Disapp.		16	29		IV. Eclipse		19	2	59.7
III. Occult.	Reapp.		19	25		I. Occult.		20	46	
I. Eclipse	Disapp.	3	4	12	17.5	II. Eclipse	7	2	8	42.6
I. Occult.	Reapp.		7	49		II. Eclipse		4	53	56.3
II. Eclipse	Disapp. *		12	50	18.0	II. Occult.		4	56	
II. Eclipse	Reapp. †		15	35	43.2	II. Occult.		7	41	
III. Occult.	Disapp. †		15	39		I. Shadow		14	27	
III. Occult.	Reapp.		18	25		I. Transit		15	51	
I. Shadow	Ingress	4	1	30		I		16	44	
I. Transit	Ingress		2	55		I		18	6	
I. Shadow	Egress		3	47				8	11	10.5
I. Transit	Egress		5	10						
I. Eclipse	Disapp.		22	40	4.1					
I. Occult.	Reapp.	5	2	18						
II. Shadow	Ingress		6	59						
II. Shadow	Egress		9	49						

JUPITER'S SATELLITES.

MEAN TIME.

JULY.

		d	h	m	s			d	h	m	s
I. Shadow	Ingress	9	8	56		I. Occult.	Reapp.	15	17	6	
I. Transit	Ingress		10	19		II. Shadow	Ingress		22	52	
I. Shadow	Egress †		11	13		II. Transit	Ingress	16		1	37
I. Transit	Egress *		12	34		II. Shadow	Egress			1	42
III. Eclipse	Disapp. *		14	48	32.8	II. Transit	Egress			4	22
III. Eclipse	Reapp.		17	50	0.1	I. Shadow	Ingress †		10	50	
III. Occult.	Disapp.		20	27		I. Transit	Ingress *		12	11	
III. Occult.	Reapp.		23	21		I. Shadow	Egress *		13	7	
I. Eclipse	Disapp. -10	6	6	9.9		I. Transit	Egress *		14	26	
I. Occult.	Reapp.		9	42		III. Eclipse	Disapp.		18	49	31
II. Eclipse	Disapp. †		15	26	31.6	III. Eclipse	Reapp.		21	50	
II. Eclipse	Reapp.		18	11	33.8	III. Occult.	Disapp.	17	0	20	
II. Occult.	Disapp.		18	13		III. Occult.	Reapp.		3	11	
II. Occult.	Reapp.		20	58		I. Eclipse	Disapp.		8	0	
I. Shadow	Ingress	11	3	24		I. Occult.	Reapp. *		11	34	
I. Transit	Ingress		4	48		II. Eclipse	Disapp.		18	2	36
I. Shadow	Egress		5	41		II. Occult.	Reapp.		23	28	
I. Transit	Egress		7	2		I. Shadow	Ingress	18	5	18	
I. Eclipse	Disapp.	12	0	34	35.9	I. Transit	Ingress		6	39	
I. Occult.	Reapp.		4	10		I. Shadow	Egress		7	35	
II. Shadow	Ingress		9	35		I. Transit	Egress		8	54	
II. Transit	Ingress *		12	22		I. Eclipse	Disapp.	19	2	28	31
II. Shadow	Egress *		12	25		I. Occult.	Reapp.		6	1	
II. Transit	Egress †		15	7		II. Shadow	Ingress *		12	11	
I. Shadow	Ingress		21	53		II. Transit	Ingress *		14	53	
I. Transit	Ingress		23	16		II. Shadow	Egress *		15	0	
I. Shadow	Egress	13	0	10		II. Transit	Egress		17	37	
I. Transit	Egress		1	30		I. Shadow	Ingress		23	47	
III. Shadow	Ingress		4	56		I. Transit	Ingress	20	1	7	
III. Shadow	Egress		8	9		I. Shadow	Egress		2	4	
III. Transit	Ingress		10	36		I. Transit	Egress		3	22	
III. Transit	Egress *		13	29		III. Shadow	Ingress		8	57	
I. Eclipse	Disapp.		19	3	7.7	III. Shadow	Egress *		12	9	
I. Occult.	Reapp.		22	38		III. Transit	Ingress *		14	26	
II. Eclipse	Disapp.	14	4	44	49.7	III. Transit	Egress		17	17	
II. Occult.	Reapp.		10	13		I. Eclipse	Disapp.		20	57	4
I. Shadow	Ingress		16	21		I. Occult.	Reapp.	21	0	29	
I. Transit	Ingress		17	44		II. Eclipse	Disapp.		7	20	48
I. Shadow	Egress		18	38		II. Occult.	Reapp. *		12	43	
I. Transit	Egress		19	58		I. Shadow	Ingress		18	15	
IV. Shadow	Ingress	15	3	18		I. Transit	Ingress		19	35	
IV. Shadow	Egress		6	4		I. Shadow	Egress		20	32	
Eclipse	Disapp. *		13	31	34.8	I. Transit	Egress		21	49	

JUPITER'S SATELLITES.

MEAN TIME.

JULY.

				d	h	m	s							
I. Eclipse	Disapp. †	22	15	25	32	8		I. Shadow	Egress	27	3	58		
I. Occult.	Reapp.		18	57				I. Transit	Egress		5	12		
II. Shadow	Ingress	23	1	28				III. Shadow	Ingress *		12	58		
II. Transit	Ingress		4	7				III. Shadow	Egress †		16	9		
II. Shadow	Egress		4	18				III. Transit	Ingress		18	13		
II. Transit	Egress		6	51				III. Transit	Egress		21	1		
IV. Eclipse	Disapp. †	10	51	45	3			I. Eclipse	Disapp.	22	51	6	3	
I. Shadow	Ingress *		12	44				I. Occult.	Reapp.	28	2	19		
IV. Eclipse	Reapp. *	13	8	18	5			II. Eclipse	Disapp. †	9	56	39	9	
I. Transit	Ingress *		14	2				II. Occult.	Reapp. *		15	10		
I. Shadow	Egress *		15	1				I. Shadow	Ingress		20	10		
I. Transit	Egress		16	17				I. Transit	Ingress		21	25		
III. Eclipse	Disapp.	22	50	20	7			I. Shadow	Egress		22	26		
III. Eclipse	Reapp.	24	1	49	49	2		I. Transit	Egress		23	39		
III. Occult.	Disapp.		4	8				I. Eclipse	Disapp.	29	17	19	35	4
III. Occult.	Reapp.		6	57				I. Occult.	Reapp.		20	46		
I. Eclipse	Disapp.		9	54	4	3		II. Shadow	Ingress	30	4	4		
I. Occult.	Reapp. *		13	24				II. Transit	Ingress		6	34		
II. Eclipse	Disapp.		20	38	33	8		II. Shadow	Egress		6	53		
II. Occult.	Reapp.	25	1	57				II. Transit	Egress		9	17		
I. Shadow	Ingress		7	12				I. Shadow	Ingress *		14	38		
I. Transit	Ingress		8	30				I. Transit	Ingress †		15	52		
I. Shadow	Egress		9	29				I. Shadow	Egress		16	54		
I. Transit	Egress †		10	44				I. Transit	Egress		18	6		
I. Eclipse	Disapp.	26	4	22	32	1		III. Eclipse	Disapp.	31	2	51	1	6
I. Occult.	Reapp.		7	52				III. Eclipse	Reapp.		5	49	29	5
II. Shadow	Ingress *		14	46				III. Occult.	Disapp.		7	51		
II. Transit	Ingress		17	20				III. Occult.	Reapp. *		10	38		
II. Shadow	Egress		17	36				I. Eclipse	Disapp. *		11	48	8	2
II. Transit	Egress		20	4				I. Occult.	Reapp. *		15	14		
I. Shadow	Ingress	27	1	41				IV. Shadow	Ingress		21	36		
I. Transit	Ingress		2	57				II. Eclipse	Disapp.	23	14	23	8	

JUPITER'S SATELLITES.

MEAN TIME.

JULY.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.	d •		III.	d r • •	
II.	d •		IV.	d r • •	

AUGUST.

IV. Shadow Egress	d h m s	1 0 10	I. Eclipse Disapp.	d h m s	5 19 13 43.0
II. Occult. Reapp.		4 23	I. Occult. Reapp.		22 35
I. Shadow Ingress		9 6	II. Shadow Ingress		6 6 40
I. Transit Ingress †		10 19	II. Transit Ingress		8 59
I. Shadow Egress *		11 23	II. Shadow Egress †		9 29
I. Transit Egress *		12 34	II. Transit Egress *		11 42
I. Eclipse Disapp.		2 6 16 37.0	I. Shadow Ingress †		16 32
I. Occult. Reapp. †		9 41	I. Transit Ingress		17 41
II. Shadow Ingress		17 22	I. Shadow Egress		18 48
II. Transit Ingress		19 47	I. Transit Egress		19 55
II. Shadow Egress		20 11	III. Eclipse Disapp.		7 6 52 2.5
II. Transit Egress		22 30	III. Eclipse Reapp. †		9 49 29.2
I. Shadow Ingress		3 3 35	III. Occult. Disapp. *		11 29
I. Transit Ingress		4 46	I. Eclipse Disapp. *		13 42 17.5
I. Shadow Egress		5 51	III. Occult. Reapp. *		14 15
I. Transit Egress		7 1	I. Occult. Reapp.		17 2
III. Shadow Ingress		16 59	II. Eclipse Disapp.		8 1 50 7.8
III. Shadow Egress		20 9	II. Occult. Reapp.		6 46
III. Transit Ingress		21 53	I. Shadow Ingress *		11 1
III. Transit Egress		4 0 40	I. Transit Ingress *		12 8
I. Eclipse Disapp.		0 45 12.6	I. Shadow Egress *		13 17
I. Occult. Reapp.		4 8	I. Transit Egress *		14 22
II. Eclipse Disapp. *		12 32 24.9	IV. Eclipse Disapp.		9 5 12 58.4
II. Occult. Reapp.		17 35	IV. Eclipse Reapp.		7 13 22.7
I. Shadow Ingress		22 4	I. Eclipse Disapp.		8 10 47.6
I. Transit Ingress		23 14	I. Occult. Reapp. *		11 29
I. Shadow Egress		5 0 20	II. Shadow Ingress		19 58
I. Transit Egress		1 28	II. Transit Ingress		22 10

JUPITER'S SATELLITES.

MEAN TIME.

AUGUST.

		d	h	m	s			d	h	m	s
II. Shadow	Egress	9	22	47		II. Transit	Ingress	17	0	32	
II. Transit	Egress	10	0	53		II. Shadow	Egress	1	23		
I. Shadow	Ingress	5	29			II. Transit	Egress	3	15		
I. Transit	Ingress	6	35			I. Shadow	Ingress	7	23		
I. Shadow	Egress	7	45			I. Transit	Ingress	8	21		
I. Transit	Egress	8	49			I. Shadow	Egress *	9	39		
III. Shadow	Ingress	21	1			I. Transit	Egress *	10	36		
III. Shadow	Egress	11	0	10		IV. Shadow	Ingress *	15	55		
III. Transit	Ingress	1	30			IV. Shadow	Egress	18	15		
I. Eclipse	Disapp.	2	39	24.6		III. Shadow	Ingress	18	1	1	
III. Transit	Egress	4	15			III. Shadow	Egress	4	9		
I. Occult.	Reapp.	5	56			I. Eclipse	Disapp.	4	33	43.4	
II. Eclipse	Disapp. *	15	8	4.1		III. Transit	Ingress	5	0		
II. Occult.	Reapp.	19	57			I. Occult.	Reapp.	7	43		
I. Shadow	Ingress	23	58			III. Transit	Egress	7	45		
I. Transit	Ingress	12	1	1		II. Eclipse	Disapp.	17	43	38.9	
I. Shadow	Egress	2	14			II. Occult.	Reapp.	22	17		
I. Transit	Egress	3	15			I. Shadow	Ingress	19	1	52	
I. Eclipse	Disapp.	21	7	56.6		I. Transit	Ingress	2	48		
I. Occult.	Reapp.	13	0	23		I. Shadow	Egress	4	8		
II. Shadow	Ingress †	9	16			I. Transit	Egress	5	2		
II. Transit	Ingress *	11	21			I. Eclipse	Disapp.	23	2	17.0	
II. Shadow	Egress *	12	5			I. Occult.	Reapp.	20	2	10	
II. Transit	Egress *	14	4			II. Shadow	Ingress *	11	53		
I. Shadow	Ingress	18	26			II. Transit	Ingress *	13	42		
I. Transit	Ingress	19	28			II. Shadow	Egress *	14	41		
I. Shadow	Egress	20	42			II. Transit	Egress †	16	25		
I. Transit	Egress	21	42			I. Shadow	Ingress	20	20		
III. Eclipse	Disapp. *	14	10	53	13.4	I. Transit	Ingress	21	14		
III. Eclipse	Reapp. *	13	49	38.4		I. Shadow	Egress	22	37		
III. Occult.	Disapp. *	15	3			I. Transit	Egress	23	29		
I. Eclipse	Disapp. *	15	36	32.9		III. Eclipse	Disapp. *	21	1		8
III. Occult.	Reapp.	17	47			I. Eclipse	Disapp.				
I. Occult.	Reapp.	18	50			III. Eclipse	Reapp.				
II. Eclipse	Disapp.	15	4	25	46.4	III. Occult.	Disapp.				
II. Occult.	Reapp. †	9	7			I. Occult.	Reap				
I. Shadow	Ingress *	12	55			III. Occult.	Reap				
I. Transit	Ingress *	13	55			II. Eclipse	Dis				
I. Shadow	Egress *	15	11			II. Occult.	Re				
I. Transit	Egress †	16	9			I. Shadow	Ir				
I. Eclipse	Disapp. *	16	10	5	4.6	I. Transit	I				
I. Occult.	Reapp. *	13	16			I. Shadow					
II. Shadow	Ingress	22	35			I. Transit					

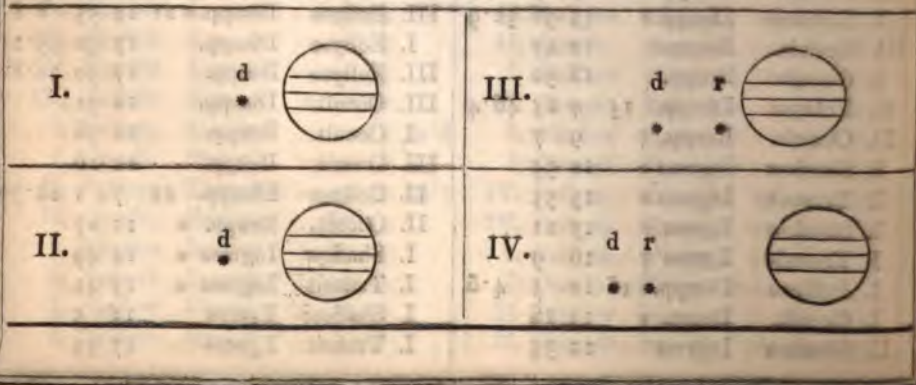
JUPITER'S SATELLITES.

MEAN TIME.

AUGUST.

		d	h	m	s			d	h	m	s
I. Eclipse	Disapp. *	23	11	59	28.5	II. Shadow	Egress	27	17	18	
I. Occult.	Reapp. *	15	2			II. Transit	Egress	18	44		
II. Shadow	Ingress	24	1	12		I. Shadow	Ingress	22	15		
II. Transit	Ingress	2	52			I. Transit	Ingress	23	0		
II. Shadow	Egress	4	0			I. Shadow	Egress	28	0	31	
II. Transit	Egress	5	35			I. Transit	Egress	1	14		
I. Shadow	Ingress *	9	17			III. Eclipse	Disapp.	18	56	39.2	
I. Transit	Ingress *	10	7			I. Eclipse	Disapp.	19	25	24.8	
I. Shadow	Egress *	11	33			III. Eclipse	Reapp.	21	50	59.5	
I. Transit	Egress *	12	21			III. Occult.	Disapp.	21	57		
III. Shadow	Ingress	25	5	2		I. Occult.	Reapp.	22	21		
I. Eclipse	Disapp.	6	28	9.1		III. Occult.	Reapp.	29	0	40	
III. Shadow	Egress †	8	9			II. Eclipse	Disapp. *	9	36	51.7	
III. Transit	Ingress †	8	26			II. Occult.	Reapp. *	13	44		
I. Occult.	Reapp. *	9	29			I. Shadow	Ingress †	16	43		
III. Transit	Egress *	11	10			I. Transit	Ingress	17	26		
II. Eclipse	Disapp.	20	19	9.9		I. Shadow	Egress	18	59		
IV. Eclipse	Disapp.	23	35	38.6		I. Transit	Egress	19	40		
II. Occult.	Reapp.	26	0	35		I. Eclipse	Disapp. *	30	13	53	59.9
IV. Eclipse	Reapp.	1	17	10.6		I. Occult.	Reapp. †	16	48		
I. Shadow	Ingress	3	46			II. Shadow	Ingress	31	3	48	
I. Transit	Ingress	4	34			II. Transit	Ingress	5	10		
I. Shadow	Egress	6	2			II. Shadow	Egress	6	37		
I. Transit	Egress	6	48			II. Transit	Egress †	7	53		
I. Eclipse	Disapp.	27	0	56	44.6	I. Shadow	Ingress *	11	12		
I. Occult.	Reapp.	3	55			I. Transit	Ingress *	11	52		
II. Shadow	Ingress *	14	30			I. Shadow	Egress *	13	28		
II. Transit	Ingress *	16	1			I. Transit	Egress *	14	6		

Phases of the Eclipses of the Satellites for an inverting Telescope.



JUPITER'S SATELLITES.

MEAN TIME.

SEPTEMBER.

		d	h	m	s			d	h	m	s
I. Eclipse	Disapp. †	1	8	22	42.7	I. Transit	Egress *	7	15	51	
III. Shadow	Ingress *		9	3		I. Eclipse	Disapp. *	8	10	17	24.4
I. Occult.	Reapp. *		11	14		I. Occult.	Reapp. *		12	59	
III. Transit	Ingress *		11	49		III. Shadow	Ingress *		13	4	
III. Shadow	Egress *		12	9		III. Transit	Ingress *		15	8	
III. Transit	Egress *		14	33		III. Shadow	Egress *		16	10	
II. Eclipse	Disapp.		22	54	38.2	III. Transit	Egress		17	52	
II. Occult.	Reapp.	2	2	52		II. Eclipse	Disapp.	9	1	30	4.9
I. Shadow	Ingress		5	40		II. Occult.	Reapp.		5	7	
I. Transit	Ingress		6	18		I. Shadow	Ingress †		7	35	
I. Shadow	Egress †		7	56		I. Transit	Ingress *		8	2	
I. Transit	Egress *		8	32		I. Shadow	Egress *		9	50	
I. Eclipse	Disapp.	3	2	51	20.1	I. Transit	Egress *		10	17	
I. Occult.	Reapp.		5	40		I. Eclipse	Disapp.	10	4	46	4.0
IV. Shadow	Ingress *		10	17		I. Occult.	Reapp. †		7	25	
IV. Shadow	Egress *		12	20		II. Shadow	Ingress		19	44	
II. Shadow	Ingress †		17	7		II. Transit	Ingress		20	35	
II. Transit	Ingress		18	19		II. Shadow	Egress		22	32	
II. Shadow	Egress		19	55		II. Transit	Egress		23	18	
II. Transit	Egress		21	2		I. Shadow	Ingress	11	2	3	
I. Shadow	Ingress	4	0	9		I. Transit	Ingress		2	28	
I. Transit	Ingress		0	45		I. Shadow	Egress		4	19	
I. Shadow	Egress		2	25		I. Transit	Egress		4	43	
I. Transit	Egress		2	59		IV. Eclipse	Disapp.		18	1	19.8
I. Eclipse	Disapp.		21	20	2.6	IV. Eclipse	Reapp.		19	19	25.6
III. Eclipse	Disapp.		22	58	25.6	I. Eclipse	Disapp.		23	14	48.7
I. Occult.	Reapp.	5	0	6		I. Occult.	Reapp.	12	1	51	
III. Occult.	Reapp.		4	1		III. Eclipse	Disapp.		2	59	52.4
II. Eclipse	Disapp. *		12	12	20.1	III. Occult.	Reapp. †		7	20	
II. Occult.	Reapp. *		15	59		II. Eclipse	Disapp. *		14	47	47.7
I. Shadow	Ingress		18	37		II. Occult.	Reapp.		18	14	
I. Transit	Ingress		19	11		I. Shadow	Ingress		20	32	
I. Shadow	Egress		20	53		I. Transit	Ingress		20	54	
I. Transit	Egress		21	25		I. Shadow	Egress		22	48	
I. Eclipse	Disapp. *	6	15	48	39.6	I. Transit	Egress				
I. Occult.	Reapp.		18	32		I. Eclipse	Disapp.				7
II. Shadow	Ingress	7	6	26		I. Occult.	Reapp.				
II. Transit	Ingress †		7	27		II. Shadow					
II. Shadow	Egress *		9	14		II. Tran ^s					
II. Transit	Egress *		10	10		II. Sh ^o					
I. Shadow	Ingress *		13	6		II. T ^h					
I. Transit	Ingress *		13	37		I. †					
I. Shadow	Egress *		15	22		I.					

JUPITER'S SATELLITES.

MEAN TIME.

SEPTEMBER.

		d	h	m	s			d	h	m	s
I. Shadow	Egress †	14	17	16		I. Transit	Ingress †	21	17	3	
I. Transit	Egress †		17	34		I. Shadow	Egress		19	11	
I. Eclipse	Disapp. *	15	12	12	14.8	I. Transit	Egress		19	18	
I. Occult.	Reapp. *		14	43		I. Eclipse	Disapp. *	22	14	7	14.0
III. Shadow	Ingress †		17	6		I. Occult.	Reapp. *		16	27	
III. Transit	Ingress		18	25		III. Shadow	Ingress		21	8	
III. Shadow	Egress		20	11		III. Transit	Ingress		21	40	
III. Transit	Egress		21	10		III. Shadow	Egress	23	0	11	
II. Eclipse	Disapp. †	16	4	5	31.9	III. Transit	Egress		0	26	
II. Occult.	Reapp. †		7	20		II. Eclipse	Disapp. †		6	40	59.8
I. Shadow	Ingress *		9	29		II. Occult.	Reapp. *		9	34	
I. Transit	Ingress *		9	46		I. Shadow	Ingress *		11	24	
I. Shadow	Egress *		11	45		I. Transit	Ingress *		11	29	
I. Transit	Egress *		12	0		I. Shadow	Egress *		13	39	
I. Eclipse	Disapp. †	17	6	40	56.5	I. Transit	Egress *		13	44	
I. Occult.	Reapp. *		9	9		I. Eclipse	Disapp. *	24	8	35	58.0
II. Shadow	Ingress		22	21		I. Occult.	Reapp. *		10	53	
II. Transit	Ingress		22	50		II. Shadow	Ingress	25	0	59	
II. Shadow	Egress	18	1	9		II. Transit	Ingress		1	6	
II. Transit	Egress		1	34		II. Shadow	Egress		3	46	
I. Shadow	Ingress		3	58		II. Transit	Egress		3	49	
I. Transit	Ingress		4	12		I. Shadow	Ingress		5	52	
I. Shadow	Egress		6	13		I. Transit	Ingress †		5	55	
I. Transit	Egress †		6	26		I. Shadow	Egress *		8	8	
I. Eclipse	Disapp. †	19	1	9	43.7	I. Transit	Egress *		8	9	
I. Occult.	Reapp.		3	35		I. Occult.	Disapp. †	26	3	4	
III. Eclipse	Disapp. †		7	1	24.4	I. Occult.	Reapp.		5	18	
III. Occult.	Reapp. *		10	36		III. Eclipse	Disapp. *		11	3	21.9
II. Eclipse	Disapp. †		17	23	15.9	III. Eclipse	Reapp. *		13	53	25.8
II. Occult.	Reapp.		20	27		II. Occult.	Disapp.		19	56	
I. Shadow	Ingress		22	26		II. Occult.	Reapp.		22	40	
I. Transit	Ingress		22	38		I. Transit	Ingress	27	0	21	
I. Shadow	Egress	20	0	42		I. Shadow	Ingress		0	21	
I. Transit	Egress		0	52		I. Transit	Egress		2	35	
IV. Shadow	Ingress		4	41		I. Shadow	Egress		2	36	
IV. Shadow	Egress †		6	23		I. Occult.	Disapp.		21	30	
I. Eclipse	Disapp.		19	38	24.8	I. Eclipse	Reapp.		23	44	54.2
I. Occult.	Reapp.		22	1		IV. Eclipse	Disapp. *	28	12		
II. Shadow	Ingress *	21	11	41		IV. Eclipse	Reapp. *		13		
II. Transit	Ingress *		11	59		II. Transit	Ingress *		14		
II. Shadow	Egress *		14	28		II. Shadow	Ingress *		14		
II. Transit	Egress *		14	42		II. Transit	Egress †		16		
I. Shadow	Ingress *		16	55		II. Shadow	Egress †		17		

JUPITER'S SATELLITES.

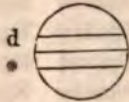
MEAN TIME.

SEPTEMBER.

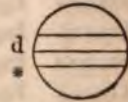
		d	h	m	s			d	h	m	s
I. Transit	Ingress	28	18	47		III. Transit	Egress	30	3	42	
I. Shadow	Ingress		18	50		III. Shadow	Egress		4	12	
I. Transit	Egress		21	1		II. Occult.	Disapp. *		9	3	
I. Shadow	Egress		21	5		II. Eclipse	Reapp. *	11	57	10.9	
I. Occult.	Disapp.*	29	15	56		I. Transit	Ingress *		13	12	
I. Eclipse	Reapp.		18	13	44.6	I. Shadow	Ingress *		13	18	
III. Transit	Ingress	30	0	55		I. Transit	Egress *		15	27	
III. Shadow	Ingress		1	10		I. Shadow	Egress *		15	34	

Phases of the Eclipses of the Satellites for an inverting Telescope.

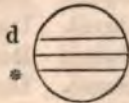
I.



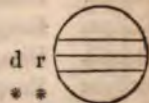
III.



II.



IV.



OCTOBER.

		d	h	m	s			d	h	m	s
I. Occult.	Disapp.*	1	10	22		I. Shadow	Egress	4	4	31	
I. Eclipse	Reapp. *		12	42	29.8	I. Occult.	Disapp.		23	14	
II. Transit	Ingress	2	3	21		I. Eclipse	Reapp.	5	1	40	4.8
II. Shadow	Ingress		3	37		II. Transit	Ingress †		16	29	
II. Transit	Egress †		6	5		II. Shadow	Ingress †		16	57	
II. Shadow	Egress *		6	24		II. Transit	Egress		19	14	
I. Transit	Ingress*		7	38		II. Shadow	Egress		19	44	
I. Shadow	Ingress*		7	47		I. Transit	Ingress		20	30	
I. Transit	Egress *		9	3		I. Shadow	Ingress		20	44	
I. Shadow	Egress *		10	2		I. Transit	Egress		22	44	
I. Occult.	Disapp.	3	4	.8		I. Shadow	Egress		23	0	
I. Eclipse	Reapp. *				10.5	I. Occult.	Disapp.	6	17	40	
III. Occult.	Disapp.*					I. Eclipse	Reapp.	20	8	57.3	
III.					I	IV. Shadow	Ingress		23	6	
II.						IV. Shadow	Egress	7	0	26	
II.						II. Transit	Ingress		4	9	
I.						Shadow	Ingress		5	11	
I.						Transit	Egress *		6	59	
						low	Egress *		8	13	

JUPITER'S SATELLITES.

MEAN TIME.

OCTOBER.

		d	h	m	s			d	h	m	s
II. Occult.	Disapp.*	7	11	16		I. Transit	Ingress	14	16	40	
II. Eclipse	Reapp.*	14	32	22	6	II. Eclipse	Reapp.	17	7	38	1
I. Transit	Ingress*	14	56			I. Shadow	Ingress	17	8		
I. Shadow	Ingress*	15	13			I. Transit	Egress	18	55		
I. Transit	Egress	17	10			I. Shadow	Egress	19	23		
I. Shadow	Egress	17	28			I. Occult.	Disapp.*	15	13	51	
I. Occult.	Disapp.*	8	12	6		I. Eclipse	Reapp.	16	33	7	4
I. Eclipse	Reapp.*	14	37	44	5	II. Transit	Ingress*	16	7	54	
II. Transit	Ingress†	9	5	37		II. Shadow	Ingress*	8	54		
II. Shadow	Ingress*	6	15			II. Transit	Egress*	10	39		
II. Transit	Egress*	8	22			I. Transit	Ingress*	11	6		
II. Shadow	Egress*	9	2			I. Shadow	Ingress*	11	37		
I. Transit	Ingress*	9	22			II. Shadow	Egress*	11	40		
I. Shadow	Ingress*	9	42			I. Transit	Egress*	13	21		
I. Transit	Egress*	11	36			I. Shadow	Egress*	13	52		
I. Shadow	Egress*	11	57			I. Occult.	Disapp.*	17	8	17	
I. Occult.	Disapp.*	10	6	32		I. Eclipse	Reapp.*	11	2	2	4
I. Eclipse	Reapp.*	9	6	37	5	III. Occult.	Disapp.	20	55		
III. Occult.	Disapp.	17	36			III. Eclipse	Reapp.	18	1	57	45
III. Eclipse	Reapp.	21	56	20	7	II. Occult.	Disapp.	2	37		
II. Occult.	Disapp.	11	0	23		I. Transit	Ingress†	5	32		
I. Transit	Ingress	3	48			I. Shadow	Ingress*	6	5		
II. Eclipse	Reapp.	3	50	1	0	II. Eclipse	Reapp.*	6	25	18	7
I. Shadow	Ingress	4	10			I. Transit	Egress*	7	47		
I. Transit	Egress*	6	3			I. Shadow	Egress*	8	21		
I. Shadow	Egress*	6	26			I. Occult.	Disapp.	19	2	43	
I. Occult.	Disapp.	12	0	58		I. Eclipse	Reapp.†	5	30	50	5
I. Eclipse	Reapp.	3	35	23	8	II. Transit	Ingress	21	4		
II. Transit	Ingress	18	46			II. Shadow	Ingress	22	14		
II. Shadow	Ingress	19	35			II. Transit	Egress	23	49		
II. Transit	Egress	21	31			I. Transit	Ingress	23	58		
I. Transit	Ingress	22	14			I. Shadow	Ingress	20	0	34	
II. Shadow	Egress	22	22			II. Shadow	Egress	1	0		
I. Shadow	Ingress	22	39			I. Transit	Egress	2	13		
I. Transit	Egress	13	0	29		I. Shadow	Egress	2	49		
I. Shadow	Egress	0	54			I. Occult.	Disapp.	21	10		
I. Occult.	Disapp.	19	24			I. Eclipse	Reapp.	23	59	46	8
I. Eclipse	Reapp.	22	4	18	3	III. Transit	Ingress*	21	10	44	
III. Transit	Ingress*	14	7	25		III. Shadow	Ingress*	13	15		
III. Shadow	Ingress*	9	13			III. Transit	Egress*	13	38		
III. Transit	Egress*	10	17			II. Occult.	Disapp.†	15	45		
III. Shadow	Egress*	12	13			III. Shadow	Egress	16	14		
II. Occult.	Disapp.*	13	30			I. Transit	Ingress	18	25		

JUPITER'S SATELLITES.

MEAN TIME.

OCTOBER.

				d	h	m	s							
I. Shadow	Ingress			21	19	3		II. Shadow	Ingress	27	0	52		
II. Eclipse	Reapp.			19	42	58	4	I. Transit	Ingress		1	44		
I. Transit	Egress			20	40			II. Transit	Egress		2	9		
I. Shadow	Egress			21	18			I. Shadow	Ingress		2	29		
I. Occult.	Disapp. †	22		15	36			II. Shadow	Egress		3	38		
I. Eclipse	Reapp.			18	28	37	9	I. Transit	Egress		3	59		
II. Transit	Ingress *	23		10	13			I. Shadow	Egress †		4	44		
II. Shadow	Ingress *			11	32			I. Occult.	Disapp.		22	56		
I. Transit	Ingress *			12	51			I. Eclipse	Reapp.	28	1	55	22	5
II. Transit	Egress *			12	58			III. Transit	Ingress *		14	7		
I. Shadow	Ingress *			13	32			III. Transit	Egress		17	3		
II. Shadow	Egress *			14	19			III. Shadow	Ingress		17	17		
I. Transit	Egress †			15	6			II. Occult.	Disapp.		18	2		
I. Shadow	Egress †			15	47			I. Transit	Ingress		20	10		
IV. Shadow	Ingress			17	39			III. Shadow	Egress		20	15		
IV. Shadow	Egress			18	24			I. Shadow	Ingress		20	58		
I. Occult.	Disapp. *	24		10	3			II. Eclipse	Reapp.		22	18	23	8
I. Eclipse	Reapp. *			12	57	34	7	I. Transit	Egress		22	25		
III. Occult.	Disapp.	25		0	16			I. Shadow	Egress		23	13		
III. Occult.	Reapp.			3	11			I. Occult.	Disapp.	29	17	23		
III. Eclipse	Disapp.			3	13	43	0	I. Eclipse	Reapp.		20	24	15	1
II. Occult.	Disapp. †			4	53			II. Transit	Ingress *	30	12	33		
III. Eclipse	Reapp. *			5	59	24	5	II. Shadow	Ingress *		14	11		
I. Transit	Ingress *			7	17			I. Transit	Ingress †		14	37		
I. Shadow	Ingress *			8	0			II. Transit	Egress †		15	19		
II. Eclipse	Reapp. *			9	0	41	3	I. Shadow	Ingress		15	27		
I. Transit	Egress *			9	32			I. Transit	Egress		16	52		
I. Shadow	Egress *			10	16			II. Shadow	Egress		16	57		
I. Occult.	Disapp.	26		4	29			I. Shadow	Egress		17	42		
I. Eclipse	Reapp. *			7	26	24	3	I. Occult.	Disapp. *	31	11	49		
II. Transit	Ingress			23	23			I. Eclipse	Reapp. †		14	53	13	8

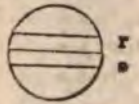
JUPITER'S SATELLITES.

MEAN TIME.

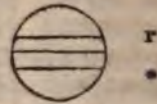
OCTOBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

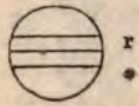
I.



III.



II.



IV.

No Eclipse
of this Satellite

NOVEMBER.

		d	h	m	s			d	h	m
III. Occult.	Disapp.	1	3	41		I. Transit	Egress	5	0	12
III. Occult.	Reapp. *		6	38		III. Shadow	Egress		0	17
II. Occult.	Disapp. *		7	11		II. Eclipse	Reapp.		0	53 54
III. Eclipse	Disapp. *		7	16	7.6	I. Shadow	Egress		1	8
I. Transit	Ingress *		9	4		I. Occult.	Disapp.		19	10
I. Shadow	Ingress *		9	55		I. Eclipse	Reapp.		22	19 58
III. Eclipse	Reapp. *		10	0	42.9	II. Transit	Ingress	6	14	56
I. Transit	Egress *		11	19		I. Transit	Ingress		16	24
II. Eclipse	Reapp. *		11	36	8.9	II. Shadow	Ingress		16	50
I. Shadow	Egress *		12	10		I. Shadow	Ingress		17	22
I. Occult.	Disapp. *	2	6	16		II. Transit	Egress		17	43
I. Eclipse	Reapp. *		9	22	4.9	I. Transit	Egress		18	39
II. Transit	Ingress	3	1	45		II. Shadow	Egress		19	36
I. Transit	Ingress		3	30		I. Shadow	Egress		19	37
II. Shadow	Ingress		3	31		I. Occult.	Disapp. *	7	13	37
I. Shadow	Ingress		4	24		I. Eclipse	Reapp.		16	48 58
II. Transit	Egress †		4	31		III. Occult.	Disapp. *	8	7	10
I. Transit	Egress *		5	45		II. Occult.	Disapp. *		9	32
II. Shadow	Egress *		6	17		III. Occult.	Reapp. *		10	9
I. Shadow	Egress *		6	39		I. Transit	Ingress *		10	51
I. Occult.	Disapp.	4	0	43		III. Eclipse	Disapp. *		11	18 35
I. Eclipse	Reapp.		3	51	4.4	I. Shadow	Ingress *		11	51
III. Transit	Ingress		17	34		I. Transit	Egress *		13	6
II. Occult.	Disapp.		20	21		III. Eclipse	Reapp. †		14	2 4
III. Transit	Egress		20	32		I. Shadow	Egress †		14	6
III. Shadow	Ingress		21	20		II. Eclipse	Reapp. †		14	11 41
I. Transit	Ingress		21	57		I. Occult.	Disapp. *	9	8	4
I. Shadow	Ingress		22	53		I. Eclipse	Reapp. *		11	17 51

JUPITER'S SATELLITES.

MEAN TIME.

NOVEMBER.

		d	h	m	s			d	h	m	s
II. Transit	Ingress	10	4	9		I. Eclipse	Reapp. *	16	13	13	41.5
I. Transit	Ingress *		5	18		II. Transit	Ingress *	17	6	35	
II. Shadow	Ingress *		6	10		I. Transit	Ingress *		7	7	
I. Shadow	Ingress *		6	19		I. Shadow	Ingress *		8	15	
II. Transit	Egress *		6	56		IV. Occult.	Disapp. *		8	18	
I. Transit	Egress *		7	33		II. Shadow	Ingress *		8	50	
I. Shadow	Egress *		8	34		I. Transit	Egress *		9	22	
II. Shadow	Egress *		8	56		II. Transit	Egress *		9	22	
I. Occult.	Disapp.	11	2	32		IV. Occult.	Reapp. *		9	41	
I. Eclipse	Reapp. *		5	46	51.5	I. Shadow	Egress *		10	30	
III. Transit	Ingress		21	5		II. Shadow	Egress *		11	35	
II. Occult.	Disapp.		22	43		I. Occult.	Disapp. †	18	4	21	
I. Transit	Ingress		23	45		I. Eclipse	Reapp. *		7	42	43.0
III. Transit	Egress	12	0	6		III. Transit	Ingress	19	0	42	
I. Shadow	Ingress		0	48		II. Occult.	Disapp.		1	6	
III. Shadow	Ingress		1	22		I. Transit	Ingress		1	34	
I. Transit	Egress		2	0		I. Shadow	Ingress		2	43	
I. Shadow	Egress		3	3		III. Transit	Egress		3	44	
II. Eclipse	Reapp.		3	29	29.9	I. Transit	Egress		3	49	
III. Shadow	Egress †		4	18		I. Shadow	Egress †		4	58	
I. Occult.	Disapp.		20	59		III. Shadow	Ingress *		5	25	
I. Eclipse	Reapp.	13	0	15	46.7	II. Eclipse	Reapp. *		6	5	11.6
II. Transit	Ingress		17	21		III. Shadow	Egress *		8	20	
I. Transit	Ingress		18	12		I. Occult.	Disapp.		22	49	
I. Shadow	Ingress		19	17		I. Eclipse	Reapp.	20	2	11	39.2
II. Shadow	Ingress		19	29		II. Transit	Ingress		19	49	
II. Transit	Egress		20	8		I. Transit	Ingress		20	2	
I. Transit	Egress		20	27		I. Shadow	Ingress		21	12	
I. Shadow	Egress		21	32		II. Shadow	Ingress		22	8	
II. Shadow	Egress		22	15		I. Transit	Egress		22	17	
I. Occult.	Disapp.	14	15	26		II. Transit	Egress		22	36	
I. Eclipse	Reapp.		18	44	48.0	I. Shadow	Egress		23	27	
III. Occult.	Disapp. *	15	10	44		II. Shadow	Egress	21	0	53	
II. Occult.	Disapp. *		11	54		I. Occult.	Disapp.		17	16	
I. Transit	Ingress *		12	39		I. Eclipse	Reapp.	20	40	41.4	
III. Occult.	Reapp. †		13	45		II. Eclipse	Disapp.	22	14	19	
I. Shadow	Ingress †		13	46		III. Eclipse	Disapp.		14	24	
I. Transit	Egress		14	55		I. Shadow	Ingress		14	29	
III. Eclipse	Disapp.	15	21	27.7		II. Shadow	Ingress		15	41	
I. Shadow	Egress		16	1		I. Transit	Egress		16	45	
II. Eclipse	Reapp.		16	47	19	II. Eclipse	Reapp.		17	27	
III. Eclipse	Reapp.		18	3	49	I. Shadow	Egress		17	56	
I. Occult.	Disapp. *	16	9	54		II. Eclipse	Reapp.		19	23	3.9


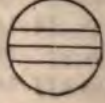


JUPITER'S SATELLITES.

MEAN TIME.

NOVEMBER.

		d	h	m	s			d	h	m	s
III. Eclipse	Disapp.	22	19	24	25.5	III. Shadow	Egress *	26	12	21	
III. Eclipse	Reapp.	22	5	40	.1	I. Occult.	Disapp.	27	0	40	
I. Occult.	Disapp. *	23	11	44		I. Eclipse	Reapp. †	4	7	34	.9
I. Eclipse	Reapp.	15	9	35	.8	I. Transit	Ingress	21	52		
I. Transit	Ingress *	24	8	57		II. Transit	Ingress	22	18		
II. Transit	Ingress *		9	4		I. Shadow	Ingress	23	8		
I. Shadow	Ingress *		10	10		I. Transit	Egress	28	0	8	
I. Transit	Egress *		11	12		II. Shadow	Ingress	0	47		
II. Shadow	Ingress *		11	28		II. Transit	Egress	1	6		
II. Transit	Egress *		11	51		I. Shadow	Egress	1	22		
I. Shadow	Egress *		12	25		II. Shadow	Egress	3	32		
II. Shadow	Egress		14	13		I. Occult.	Disapp.	19	8		
I. Occult.	Disapp. *	25	6	12		I. Eclipse	Reapp.	22	36	37	.7
I. Eclipse	Reapp. *		9	38	38.0	I. Transit	Ingress	29	16	20	
IV. Transit	Ingress		18	11		II. Occult.	Disapp.	16	46		
IV. Transit	Egress		19	50		I. Shadow	Ingress	17	37		
I. Transit	Ingress	26	3	25		III. Occult.	Disapp.	18	9		
II. Occult.	Disapp.		3	32		I. Transit	Egress	18	36		
III. Transit	Ingress †		4	23		I. Shadow	Egress	19	51		
I. Shadow	Ingress †		4	39		III. Occult.	Reapp. †	21	13		
I. Transit	Egress *		5	40		II. Eclipse	Reapp.	21	58	54	.0
I. Shadow	Egress *		6	54		III. Eclipse	Disapp.	23	28	3	.7
III. Transit	Egress *		7	27		III. Eclipse	Reapp.	30	2	8	10.7
II. Eclipse	Reapp. *		8	40	58.9	I. Occult.	Disapp.	13	36		
III. Shadow	Ingress *		9	27		I. Eclipse	Reapp.	17	5	32	.8

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.		r *	III.		d r * *
II.		r *	IV.		No Eclipse of this Satellite.

JUPITER'S SATELLITES.

MEAN TIME.

DECEMBER.

		d	h	m	s			d	h	m	s
ansit	Ingress *	1	10	48		III. Eclipse	Reapp. *	7	6	10	8.7
ansit	Ingress *		11	35		I. Occult.	Disapp.		15	29	
adow	Ingress *		12	5		I. Eclipse	Reapp.		19	1	31.2
ansit	Egress †		13	4		I. Transit	Ingress †	8	12	41	
adow	Ingress		14	7		I. Shadow	Ingress		14	1	
adow	Egress		14	20		II. Transit	Ingress		14	8	
ansit	Egress		14	22		I. Transit	Egress		14	57	
adow	Egress		16	52		I. Shadow	Egress		16	16	
cult.	Disapp. *	2	8	4		II. Shadow	Ingress		16	47	
lipse	Reapp. *		11	34	35.3	II. Transit	Egress		16	56	
ansit	Ingress *	3	5	16		II. Shadow	Egress		19	31	
cult.	Disapp. *		6	1		I. Occult.	Disapp. *	9	9	58	
adow	Ingress *		6	34		I. Eclipse	Reapp.		13	30	33.9
ansit	Egress *		7	32		I. Transit	Ingress *	10	7	10	
ansit	Ingress *		8	10		I. Shadow	Ingress *		8	30	
adow	Egress *		8	49		II. Occult.	Disapp. *		8	32	
ansit	Egress *		11	15		I. Transit	Egress *		9	25	
lipse	Reapp. *		11	16	52.2	I. Shadow	Egress *		10	44	
adow	Ingress		13	29		III. Transit	Ingress †		12	2	
adow	Egress		16	22		II. Eclipse	Reapp.		13	52	51.9
cult.	Disapp.	4	0	44		III. Transit	Egress		15	8	
cult.	Disapp.		2	33		III. Shadow	Ingress		17	31	
cult.	Reapp.		2	38		III. Shadow	Egress		20	23	
lipse	Reapp. *		6	3	32.6	I. Occult.	Disapp. †	11	4	27	
ansit	Ingress		23	44		I. Eclipse	Reapp. *		7	59	31.3
ansit	Ingress	5	0	51		I. Transit	Ingress	12	1	38	
adow	Ingress		1	3		I. Shadow	Ingress		2	58	
ansit	Egress		2	0		II. Transit	Ingress		3	26	
adow	Egress		3	18		I. Transit	Egress †		3	54	
adow	Ingress		3	27		I. Shadow	Egress *		5	13	
ansit	Egress		3	39		II. Shadow	Ingress *		6	6	
adow	Egress *		6	11		II. Transit	Egress *		6	14	
cult.	Disapp.		21	1		II. Shadow	Egress *		8	50	
lipse	Reapp.	6	0	32	35.8	IV. Transit	Ingress *		11	13	
ansit	Ingress		18	13		IV.	Egress		13	12	
cult.	Disapp.		19	16		I	Disapp.		22	55	
adow	Ingress		19	32				13	2	28	34.6
ansit	Egress		20	29				14	20	7	
adow	Egress		21	47					21	27	
cult.	Disapp.		21	59						49	
lipse	Reapp.	7	0	34	50.1					22	
cult.	Reapp.		1	5							
lipse	Disapp.		3	31	8						

JUPITER'S SATELLITES.

MEAN TIME.

DECEMBER.

		d	h	m	s			d	h	m	s
II. Eclipse	Reapp.	14	3	10	53.1	II. Occult.	Disapp.	21	0	24	
III. Occult.	Reapp. *		5	0		I. Shadow	Egress		1	38	
III. Eclipse	Disapp. *		7	34	19.6	II. Eclipse	Reapp. *		5	47	
III. Eclipse	Reapp. *		10	12	12.4	III. Occult.	Disapp. *		5	54	
I. Occult.	Disapp.		17	24		III. Occult.	Reapp. *		9	0	
I. Eclipse	Reapp.		20	57	30.0	III. Eclipse	Disapp. †		11	37	4
I. Transit	Ingress	15	14	35		III. Eclipse	Reapp.		14	13	50
I. Shadow	Ingress		15	56		I. Occult.	Disapp.		19	19	
II. Transit	Ingress		16	44		I. Eclipse	Reapp.		22	53	28
I. Transit	Egress		16	51		I. Transit	Ingress	22	16	30	
I. Shadow	Egress		18	11		I. Shadow	Ingress		17	52	
II. Shadow	Ingress		19	26		I. Transit	Egress		18	46	
II. Transit	Egress		19	32		II. Transit	Ingress		19	22	
II. Shadow	Egress		22	10		I. Shadow	Egress		20	6	
I. Occult.	Disapp. †	16	11	53		II. Shadow	Ingress		22	5	
I. Eclipse	Reapp.		15	26	32.6	II. Transit	Egress		22	10	
I. Transit	Ingress *	17	9	4		II. Shadow	Egress	23	0	49	
I. Shadow	Ingress *		10	25		I. Occult.	Disapp.		13	48	
II. Occult.	Disapp. *		11	6		I. Eclipse	Reapp.		17	22	30
I. Transit	Egress †		11	20		I. Transit	Ingress †	24	10	59	
I. Shadow	Egress		12	40		I. Shadow	Ingress		12	21	
III. Transit	Ingress		15	59		I. Transit	Egress		13	15	
II. Eclipse	Reapp.		16	28	57.6	II. Occult.	Disapp.		13	42	
III. Transit	Egress		19	6		I. Shadow	Egress		14	35	
III. Shadow	Ingress		21	34		II. Eclipse	Reapp.		19	5	9
III. Shadow	Egress	18	0	25		III. Transit	Ingress		20	2	
I. Occult.	Disapp. *		6	21		III. Transit	Egress		23	8	
I. Eclipse	Reapp. *		9	55	30.0	III. Shadow	Ingress	25	1	37	
I. Transit	Ingress	19	3	32		III. Shadow	Egress †		4	27	
I. Shadow	Ingress *		4	54		I. Occult.	Disapp. *		8	17	
I. Transit	Egress *		5	48		I. Eclipse	Reapp.		11	51	27
II. Transit	Ingress *		6	2		I. Transit	Ingress *	26	5	28	
I. Shadow	Egress *		7	9		I. Shadow	Ingress *		6	50	
II. Shadow	Ingress *		8	45		I. Transit	Egress *		7	44	
II. Transit	Egress *		8	51		II. Transit	Ingress *		8	41	
II. Shadow	Egress †		11	29		I. Shadow	Egress *		9	4	
I. Occult.	Disapp.	20	0	50		II. Shadow	Ingress †		11	23	
I. Eclipse	Reapp. †		4	24	33.3	II. Transit	Egress †				
IV. Occult.	Disapp.		18	24		II. Shadow	Egress				
IV. Occult.	Reapp.		20	28		I. Occult.	Disapp.				
I. Transit	Ingress		22	1		I. Eclipse	Reapp.				
I. Shadow	Ingress		23	23		I. Transit	Ingress				
I. Transit	Egress	21	0	17		I. Shadow	Ingress				


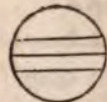


JUPITER'S SATELLITES.

MEAN TIME.

DECEMBER.

		d	h	m	s			d	h	m	s
I. Transit	Egress	28	2	13		I. Transit	Egress	29	20	42	
I. Occult.	Disapp.	3	1			I. Shadow	Egress	22	2		
I. Shadow	Egress	3	33			II. Transit	Ingress	22	2		
I. Eclipse	Reapp. *	8	23	17	9	II. Shadow	Ingress	30	0	43	
I. Occult.	Disapp. *	9	58			II. Transit	Egress	0	50		
I. Occult.	Reapp.	13	5			II. Shadow	Egress	3	27		
I. Eclipse	Disapp.	15	39	47	3	I. Occult.	Disapp.	15	45		
I. Eclipse	Reapp.	18	15	25	6	I. Eclipse	Reapp.	19	18	27	2
I. Occult.	Disapp.	21	16			I. Transit	Ingress	31	12	55	
I. Eclipse	Reapp.	29	0	49	25	I. Shadow	Ingress	14	16		
I. Transit	Ingress *	5	23			I. Transit	Egress	15	11		
I. Transit	Egress *	7	28			II. Occult.	Disapp.	16	20		
I. Transit	Ingress	18	26			I. Shadow	Egress	16	31		
I. Shadow	Ingress	19	47			II. Eclipse	Reapp.	21	41	28	0

Phases of the Eclipses of the Satellites for an inverting Telescope.

I. 	III. 
II. 	IV. 

MEAN TIME.

JANUARY.			MARCH.		
d	h	m	d	h	m
1	13	39	3	18	34
3	19	23	4	11	43
4	0	41	5	6	38
6	15	0	6	5	45
7	18	26	9	9	38
10	12	5	10	12	54
10	23	0	13	3	26
12	0	17	13	7	6
15	21	33	14	17	39
18	17	10	16	2	38
23	13	23	17	12	0
25	1	5	19	13	36
28	2	33	19	21	49
30	18	0	22	13	37
31	0	16	30	17	15

FEBRUARY.			APRIL.		
d	h	m	d	h	m
1	16	12	2	1	19
2	22	12	2	5	13
4	14	0	2	16	12
6	0	8	3	3	39
6	22	29	3	5	59
7	7	48	4	-	-
7	14	49	5	21	23
12	3	39	7	1	3
14	20	47	8	23	33
14	22	6	9	13	20
17	4	16	9	14	16
23	4	9	17	23	4
24	1	45	19	-	-
24	17	37	20	0	32
29	8	58	26	7	35

MARCH.		
d	h	m
1	2	57
1	18	20
2	16	32

MEAN TIME.

MAY.

d	h	m		o	'
2	13	15	☿ in Perihelion.	0	1
2	15	2	♀♂☾ - - - - ♀	1	29 S.
2	20	26	♀♂♃ - - - - ♀	1	11 N.
4	14	13	♃♂☾ - - - - ♃	2	46 S.
4	21	2	♀♂☾ - - - - ♀	1	35 S.
7	4	17	♃♂☾ - - - - ♃	5	30 S.
10	23	29	♃♂☉		
12	21	22	♀ greatest Hel. Lat. N.		
14	15	10	♂ Stationary.		
14	20	18	♂♂☾ - - - - ♂	0	58 S.
26	3	32	♀ greatest elong.	22	57 E.
27	1	3	♀♂♃ - - - - ♀	0	47 S.
27	23	29	♀♂♂ - - - - ♀	2	25 N.
28	15	48	♃♂☾ - - - - ♃	0	40 N.

JUNE.

d	h	m		o	'
1	2	21	♃♂☾ - - - - ♃	2	54 S.
1	13	4	♀♂☾ - - - - ♀	3	58 S.
3	19	34	♃♂☾ - - - - ♃	5	29 S.
4	1	15	♀♂☾ - - - - ♀	4	31 S.
5	8	53	♀ in ☿		
8	6	52	♀ Stationary.		
8	9	8	♀♂♄ Geminor. ✖ (7 ^m .4) W.		
11	13	24	♂♂☾ - - - - ♂	1	23 S.
14	21	53	♂ in ☿		
15	12	51	♀ in Aphelion.		
16	17	56	♀♂♂ - - - - ♀	2	21 S.
20	18	38	☉ enters ♋, Summer comm ^s .		
21	0	58	♀ in Inf. ♂☉		
23	19	45	♀ in ☿		
24	14	9	♃♂☉		
25	4	12	♃♂☾ - - - - ♃	0	3 S.
25	15	16	♀♂♀ - - - - ♀	4	40 S.
28	12	13	♃♂☾ - - - - ♃	3	7 S.
28	22	30	♃☐☉		
30	20	11	♀♂☾ - - - - ♀	9	11 S.
30	23	46	♀♂♂ - - - - ♀	1	0 N.

JULY.

d	h	m		o	'
1	10	15	♃♂☾ - - - - ♃	5	31 S.
1	11	10	♀♂☾ - - - - ♀	4	31 S.
1	22	39	☉ in Apogee.		
2	12	32	♀ Stationary.		
5	22	49	♀ greatest Hel. Lat. S.		
9	20	50	♂♂☾ - - - - ♂	0	44 S.
11	20	26	♂☐☉		
13	16	52	♀ greatest elong.	20	27 W.
18	8	39	♀♂♂ - - - - ♀	0	47 S.
20	4	38	♀ in Sup. ♂☉		
21	13	49	♂♂♄ Virginis ✖ (14 ^m .1) W.		
22	13	0	♃♂☾ - - - - ♃	0	39 S.
24	22	48	♀ in ☿		
25	19	48	♃♂☾ - - - - ♃	3	24 S.
27	6	0	♀ in Perihelion.		
28	23	15	♃♂☾ - - - - ♃	5	38 S.
29	7	28	♃ Stationary.		
29	12	29	♀ in Perihelion.		
30	10	15	♀♂☾ - - - - ♀	4	5 S.
31	13	33	♀♂☾ - - - - ♀	3	33 S.

AUGUST.

d	h	m		o	'
7	12	32	♂♂☾ - - - - ♂	0	33 N.
8	20	39	♀ greatest Hel. Lat. N.		
8	21	41	♀ in Sup. ♂☉		
16	6	8	♀♂♀ - - - - ♀	0	11 N.
17	7	26	♃☐☉		
18	7	38	♀ greatest Hel. Lat. N.		
18	19	18	♃♂☾ - - - - ♃	0	56 S.
22	2	15	♃♂☾ - - - - ♃	3	40 S.
25	10	15	♃♂☾ - - - - ♃	5	49 S.
30	6	17	♃ St.		
30	23	17	♀♂♄	1	3 S.
31	15	9	♀	1	43 S.

MEAN TIME.

SEPTEMBER.			NOVEMBER.		
d	h	m	d	h	m
1	8	10	1	19	53
5	8	25	2	3	22
11	12	6	4	19	51
15	0	29	8	11	58
17	23	9	12	3	8
18	9	14	14	16	29
18	10	48	15	12	54
21	19	41	16	13	5
22	4	37	17	12	0
22	8	53	18	14	41
26	14	26	24	7	19
28	-	-	26	14	19
28	15	46	28	7	23
30	12	33	30	1	3
30	19	30			
OCTOBER.			DECEMBER.		
d	h	m	d	h	m
1	22	5	1	0	57
3	23	55	5	19	27
4	5	48	8	11	23
5	4	25	9	5	49
6	11	33	9	11	50
12	5	49	9	16	35
13	-	-	12	9	23
13	9	16	12	20	44
15	17	42	21	2	39
17	2	13	21	12	0
19	4	24	21	16	22
20	22	3	26	6	0
25	11	45	27	16	37
25	13	28	28	3	56
25	21	48	28	21	20
26	23	3	28	21	32
30	21	47	29	5	49
			29	23	1
			30	0	29
			30	14	3
			31	15	46

ELEMENTS FOR DETERMINING THE GEOCENTRIC POSITION,
MAGNITUDE, AND APPEARANCE OF SATURN'S RING.

Mean Noon.	<i>p</i>	<i>a</i>	<i>b</i>	<i>a'</i>	<i>b'</i>	<i>l</i>	<i>l'</i>
1856.							
Jan. 1	— 6° 5' 5"	46° 55'	— 20° 91'	30° 96'	— 13° 91'	— 26° 41' 7"	— 26° 41' 6"
— 21	5 57' 7"	45° 73'	20° 64'	30° 41'	13° 73'	26 50' 3"	26 39' 2"
Feb. 10	5 53' 0"	44° 41'	20° 13'	29° 53'	13° 38'	26 56' 8"	26 36' 7"
Mar. 1	5 52' 4"	42° 86'	19° 47'	28° 50'	12° 95'	27 1' 5"	26 33' 8"
— 21	5 56' 3"	41° 29'	18° 78'	27° 46'	12° 49'	27 3' 4"	26 30' 5"
April 10	6 4' 0"	39° 90'	18° 14'	26° 53'	12° 06'	27 2' 2"	26 27' 1"
— 30	6 14' 4"	38° 77'	17° 57'	25° 79'	11° 68'	26 56' 8"	26 23' 4"
May 20	6 26' 3"	37° 97'	17° 10'	25° 25'	11° 37'	26 46' 4"	26 19' 4"
June 9	6 38' 3"	37° 51'	16° 75'	24° 95'	11° 14'	26 31' 6"	26 15' 0"
— 29	6 49' 8"	37° 41'	16° 51'	24° 88'	10° 98'	26 11' 7"	26 10' 5"
July 19	6 59' 8"	37° 66'	16° 39'	25° 05'	10° 90'	25 48' 2"	26 5' 5"
Aug. 8	7 8' 0"	38° 26'	16° 40'	25° 44'	10° 91'	25 23' 2"	26 0' 3"
— 28	7 14' 2"	39° 20'	16° 55'	26° 07'	11° 01'	24 58' 8"	25 54' 8"
Sept. 17	7 18' 5"	40° 44'	16° 86'	26° 89'	11° 21'	24 38' 3"	25 49' 1"
Oct. 7	7 21' 0"	41° 91'	17° 32'	27° 87'	11° 52'	24 24' 9"	25 43' 1"
— 27	7 21' 7"	43° 48'	17° 92'	28° 91'	11° 92'	24 20' 8"	25 36' 8"
Nov. 16	7 20' 8"	44° 96'	18° 61'	29° 90'	12° 38'	24 27' 3"	25 30' 2"
Dec. 6	7 18' 3"	46° 09'	19° 27'	30° 65'	12° 82'	24 42' 9"	25 23' 4"
— 26	7 14' 4"	46° 65'	19° 77'	31° 02'	13° 14'	25 4' 2"	25 16' 2"
1857.							
Jan. 15	— 7° 9' 7"	46° 48'	— 19° 96'	30° 91'	— 13° 28'	— 25° 26' 2"	— 25° 8' 8"

p denotes the inclination of the Northern semi-minor axes of the Rings to the circle of Declination; + East, — West.

a the apparent outer *major* axis of the outer Ring.

b ————— outer *minor* axis of the outer Ring; + North surface visible,
— South :

a' ————— inner *major* axis of the inner Ring.

b' ————— inner *minor* axis of the inner Ring.

l the elevation of the Earth above the plane of the Ring,
+ North, — South.

l' the elevation of the Sun above the plane of the Ring
+ North, — South.

OPPOSITION OF MARS, 1856.

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
APRIL 2, 1856.

Date.	Star.	Magnitude.	Apparent		Semidiameter in		Hor. Par.
			Right Ascension.	Declination.	R. A.	Dec.	
1856.			h m s	o ' "	"	"	"
Feb. 14	B.A.C. 4473 -	7	13 15 3 ^h 50 ^m	S. 5 26 45 ^s 1			
	Mars - - - -	S.	13 22 37 ^h 69 ^m	5 34 40 ^s 9	0 ^h 34	5 ^h 0	9 ^h 6
	81 Virginis - -	7	13 30 3 ^h 47 ^m	7 8 21 ^s 2			
15	B.A.C. 4473 -	7	13 15 3 ^h 52 ^m	5 26 45 ^s 3			
	Mars - - - -	N.	13 23 0 ^h 88 ^m	5 36 11 ^s 5	0 ^h 34	5 ^h 0	9 ^h 7
	81 Virginis - -	7	13 30 3 ^h 49 ^m	7 8 21 ^s 4			
16	♄ Virginis - -	7	13 22 55 ^h 93 ^m	5 43 39 ^s 4			
	Mars - - - -	S.	13 23 21 ^h 63 ^m	5 37 28 ^s 3	0 ^h 34	5 ^h 1	9 ^h 8
	81 Virginis - -	7	13 30 3 ^h 52 ^m	7 8 21 ^s 5			
17	♄ Virginis - -	7	13 22 55 ^h 95 ^m	5 43 39 ^s 5			
	Mars - - - -	N.	13 23 39 ^h 90 ^m	5 38 31 ^s 2	0 ^h 34	5 ^h 1	9 ^h 9
	81 Virginis - -	7	13 30 3 ^h 55 ^m	7 8 21 ^s 6			
18	♄ Virginis - -	7	13 22 55 ^h 98 ^m	5 43 39 ^s 7			
	Mars - - - -	S.	13 23 55 ^h 66 ^m	5 39 20 ^s 0	0 ^h 35	5 ^h 2	10 ^h 0
	81 Virginis - -	7	13 30 3 ^h 58 ^m	7 8 21 ^s 8			
19	♄ Virginis - -	7	13 22 56 ^h 00 ^m	5 43 39 ^s 8			
	Mars - - - -	N.	13 24 8 ^h 86 ^m	5 39 54 ^s 7	0 ^h 35	5 ^h 2	10 ^h 1
	81 Virginis - -	7	13 30 3 ^h 60 ^m	7 8 21 ^s 9			
20	♄ Virginis - -	7	13 22 56 ^h 03 ^m	5 43 39 ^s 9			
	Mars - - - -	S.	13 24 19 ^h 47 ^m	5 40 15 ^s 1	0 ^h 36	5 ^h 3	10 ^h 2
	81 Virginis - -	7	13 30 3 ^h 63 ^m	7 8 22 ^s 0			
21	♄ Virginis - -	7	13 22 56 ^h 05 ^m	5 43 40 ^s 1			
	Mars - - - -	N.	13 24 27 ^h 46 ^m	5 40 21 ^s 1	0 ^h 36	5 ^h 3	10 ^h 3
	81 Virginis - -	7	13 30 3 ^h 65 ^m	7 8 22 ^s 1			
22	♄ Virginis - -	7	13 22 56 ^h 08 ^m	5 43 40 ^s 2			
	Mars - - - -	S.	13 24 32 ^h 78 ^m	5 40 12 ^s 5	0 ^h 37	5 ^h 4	10 ^h 4
	81 Virginis - -	7	13 30 3 ^h 68 ^m	7 8 22 ^s 3			
23	♄ Virginis - -	7	13 22 56 ^h 10 ^m	5 43 40 ^s 4			
	Mars - - - -	N.	13 24 35 ^h 38 ^m	5 39 49 ^s 1	0 ^h 37	5 ^h 4	10 ^h 5
	81 Virginis - -	7	13 30 3 ^h 70 ^m	7 8 22 ^s 4			
24	♄ Virginis - -	7	13 22 56 ^h 13 ^m	5 43 40 ^s 6			
	Mars - - - -	S.	13 24 35 ^h 22 ^m	5 39 10 ^s 9	0 ^h 37	5 ^h 5	10 ^h 6
	81 Virginis - -	7	13 30 3 ^h 73 ^m	7 8 22 ^s 6			
25	♄ Virginis - -	7	13 22 56 ^h 15 ^m	5 43 40 ^s 7			
	Mars - - - -	N.	13 24 32 ^h 27 ^m	5 38 17 ^s 7	0 ^h 37	5 ^h 5	10 ^h 7
	81 Virginis - -	7	13 30 3 ^h 76 ^m	7 8 22 ^s 8			
26	♄ Virginis - -	7	13 22 56 ^h 18 ^m	5 43 40 ^s 8			
	Mars - - - -	S.	13 24 26 ^h 50 ^m	5 37 9 ^s 4	0 ^h 38	5 ^h 6	10 ^h 8
	♄ Virginis - -	6	13 24 29 ^h 89 ^m	S. 5 30 49 ^s 3			

OPPOSITION OF MARS, 1856.

531

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
APRIL 2, 1856.

Date.	Star.	Magnitude.	Apparent		Semidiameter in		Hor. Par.
			Right Ascension.	Declination.	R. A.	Dec.	
1856.			h m s	° ' "	"	"	"
Feb. 27	66 Virginis - -	6	13 17 4.64	S. 4 24 43.6			
	Mars - - - - -	N.	13 24 17.87	5 35 45.8	0.38	5.6	10.9
	β Virginis - -	6	13 24 29.91	5 30 49.4			
28	66 Virginis - -	6	13 17 4.66	4 24 43.7			
	Mars - - - - -	S.	13 24 6.35	5 34 6.9	0.38	5.7	11.0
	β Virginis - -	6	13 24 29.94	5 30 49.6			
29	66 Virginis - -	6	13 17 4.68	4 24 43.8			
	Mars - - - - -	N.	13 23 51.92	5 32 12.7	0.38	5.7	11.1
	β Virginis - -	6	13 24 29.96	5 30 49.7			
Mar. 1	66 Virginis - -	6	13 17 4.71	4 24 44.0			
	Mars - - - - -	N.	13 23 34.56	5 30 3.2	0.39	5.8	11.2
	β Virginis - -	6	13 24 29.98	5 30 49.9			
2	66 Virginis - -	6	13 17 4.73	4 24 44.1			
	Mars - - - - -	S.	13 23 14.27	5 27 38.3	0.39	5.8	11.3
	β Virginis - -	6	13 24 30.00	5 30 50.0			
3	66 Virginis - -	6	13 17 4.75	4 24 44.2			
	Mars - - - - -	N.	13 22 51.03	5 24 58.2	0.40	5.9	11.4
	β Virginis - -	6	13 24 30.03	5 30 50.1			
4	B.A.C. 4473 -	7	13 15 3.94	5 26 47.8			
	Mars - - - - -	S.	13 22 24.84	5 22 2.7	0.40	6.0	11.5
	80 Virginis - -	6	13 28 3.06	4 39 51.8			
5	B.A.C. 4473 -	7	13 15 3.96	5 26 47.9			
	Mars - - - - -	N.	13 21 55.69	5 18 52.1	0.40	6.0	11.6
	80 Virginis - -	6	13 28 3.08	4 39 51.9			
6	B.A.C. 4473 -	7	13 15 3.98	5 26 48.1			
	Mars - - - - -	S.	13 21 23.59	5 15 26.5	0.41	6.1	11.7
	80 Virginis - -	6	13 28 3.10	4 39 52.0			
7	B.A.C. 4473 -	7	13 15 3.99	5 26 48.2			
	Mars - - - - -	N.	13 20 48.56	5 11 46.1	0.41	6.1	11.8
	80 Virginis - -	6	13 28 3.12	4 39 52.1			
8	B.A.C. 4473 -	7	13 15 4.01	5 26 48.3			
	Mars - - - - -	S.	13 20 10.62	5 11 46.2	0.42	6.2	11.9
	80 Virginis - -	6	13 28 3.14	4 39 52.2			
9	Mars - - - - -	N.	13 19 29.77	5 11 46.3	0.42	6.2	12.0
	β Virginis - -	6	13 24 30.15	5 30 49.8			
	81 Virginis - -	7	13 30 4.04	4 39 52.3			
10	Mars - - - - -	S.	13 18 46.05	5 11 46.4	0.42	6.3	12.1
	β Virginis - -	6	13 24 30.17	5 30 49.9			
	81 Virginis - -	7	13 30 4.06	4 39 52.4			

OPPOSITION OF MARS, 1856.

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
APRIL 2, 1856.

Date.	Star.	Magnitude.	Apparent		Semidiameter in		Hor. Par.
			Right Ascension.	Declination.	R. A.	Dec.	
1856.			h m s	° ' "	"	"	"
Mar. 11	Mars - - - -	N.	13 17 59.50	S. 4 54 40.2	0.42	6.3	12.2
	ℓ Virginis - -	6	13 24 30.18	5 30 50.9			
	81 Virginis - -	7	13 30 4.08	7 8 24.6			
12	Mars - - - -	S.	13 17 10.17	4 49 49.1	0.43	6.4	12.3
	ℓ Virginis - -	6	13 24 30.20	5 30 51.0			
	81 Virginis - -	7	13 30 4.09	7 8 24.7			
13	Mars - - - -	N.	13 16 18.10	4 44 44.8	0.43	6.4	12.4
	ℓ Virginis - -	6	13 24 30.22	5 30 51.1			
	81 Virginis - -	7	13 30 4.11	7 8 24.8			
14	Mars - - - -	S.	13 15 23.35	4 39 27.8	0.43	6.5	12.5
	ℓ Virginis - -	7	13 22 56.52	5 43 42.7			
	81 Virginis - -	7	13 30 4.13	7 8 24.9			
15	Mars - - - -	N.	13 14 25.98	4 33 58.4	0.43	6.5	12.6
	ℓ Virginis - -	7	13 22 56.54	5 43 42.7			
	81 Virginis - -	7	13 30 4.15	7 8 25.0			
16	Mars - - - -	S.	13 13 26.08	4 28 17.3	0.44	6.6	12.7
	66 Virginis - -	6	13 17 4.98	4 24 45.4			
	ℓ Virginis - -	7	13 22 56.55	5 43 42.8			
17	Mars - - - -	N.	13 12 23.71	4 22 24.8	0.44	6.6	12.8
	66 Virginis - -	6	13 17 5.00	4 24 45.5			
	ℓ Virginis - -	7	13 22 56.57	5 43 42.9			
18	Mars - - - -	S.	13 11 18.93	4 16 21.4	0.44	6.6	12.8
	65 Virginis - -	6	13 15 52.67	4 10 20.5			
	ℓ Virginis - -	7	13 22 56.58	5 43 43.0			
19	Mars - - - -	N.	13 10 11.84	4 10 7.7	0.45	6.7	12.9
	65 Virginis - -	6	13 15 52.69	4 10 20.6			
	ℓ Virginis - -	7	13 22 56.60	5 43 43.1			
20	Mars - - - -	S.	13 9 2.52	4 3 44.2	0.45	6.7	13.0
	65 Virginis - -	6	13 15 52.70	4 10 20.7			
	ℓ Virginis - -	7	13 22 56.61	5 43 43.2			
21	Mars - - - -	N.	13 7 51.06	3 57 11.4	0.45	6.8	13.1
	65 Virginis - -	6	13 15 52.72	4 10 20.8			
	ℓ Virginis - -	7	13 22 56.63	5 43 43.3			
22	Mars - - - -	S.	13 6 37.55	3 50 30.0	0.45	6.8	13.1
	65 Virginis - -	6	13 15 52.73	4 10 20.8			
	ℓ Virginis - -	7	13 22 56.64	5 43 43.3			
23	ℓ Virginis - -	6	12 52 16.13	3 2 10.3			
	48 Virginis - -	6	12 56 30.78	2 53 23.7			
	Mars - - - -	N.	13 5 22.12	S. 3 43 40.6	0.45	6.8	13.2

OPPOSITION OF MARS, 1856.

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EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
APRIL 2, 1856.

Date.	Star.	Magnitude.	Apparent		Semidiameter in		Hor. Par.
			Right Ascension.	Declination.	R. A.	Dec.	
1856.			h m s	° ' "	" "	"	
Mar. 24	κ Virginis - -	6	12 52 16.14	S. 3 2 10.3			
	48 Virginis - -	6	12 56 30.79	2 53 23.7			
	Mars - - - -	S.	13 4 4.87	3 36 44.0	0.46	6.9	13.3
25	κ Virginis - -	6	12 52 16.15	3 2 10.4			
	48 Virginis - -	6	12 56 30.80	2 53 23.8			
	Mars - - - -	N.	13 2 45.94	3 29 40.9	0.46	6.9	13.3
26	κ Virginis - -	6	12 52 16.16	3 2 10.4			
	48 Virginis - -	6	12 56 30.81	2 53 23.9			
	Mars - - - -	S.	13 1 25.45	3 22 32.2	0.46	6.9	13.4
27	κ Virginis - -	6	12 52 16.17	3 2 10.5			
	48 Virginis - -	6	12 56 30.82	2 53 23.9			
	Mars - - - -	N.	13 0 3.53	3 15 18.5	0.46	6.9	13.4
28	46 Virginis - -	6½	12 53 12.75	2 35 44.0			
	Mars - - - -	S.	12 58 40.29	3 8 0.6	0.47	7.0	13.5
	θ Virginis - -	4½	13 2 31.31	4 46 21.0			
29	48 Virginis - -	6	12 56 30.84	2 53 23.9			
	Mars - - - -	N.	12 57 15.91	3 0 39.6	0.47	7.0	13.5
	θ Virginis - -	4½	13 2 31.32	4 46 21.0			
30	Mars - - - -	S.	12 55 50.55	2 53 16.3	0.47	7.0	13.6
	48 Virginis - -	6	12 56 30.85	2 53 23.9			
	θ Virginis - -	4½	13 2 31.33	4 46 21.1			
31	Mars - - - -	N.	12 54 24.36	2 45 51.8	0.47	7.0	13.6
	48 Virginis - -	6	12 56 30.86	2 53 24.0			
	θ Virginis - -	4½	13 2 31.33	4 46 21.2			
April 1	Mars - - - -	N.	12 52 57.51	2 38 27.0	0.47	7.0	13.6
	46 Virginis - -	6½	12 53 12.78	2 35 44.2			
	θ Virginis - -	4½	13 2 31.34	4 46 21.2			
2	Mars - - - -	S.	12 51 30.16	2 31 2.8	0.47	7.1	13.7
	46 Virginis - -	6½	12 53 12.79	2 35 44.2			
	θ Virginis - -	4½	13 2 31.35	4 46 21.3			
3	Mars - - - -	N.	12 50 2.46	2 23 40.3	0.47	7.1	13.7
	46 Virginis - -	6½	12 53 12.80	2 35 44.2			
	θ Virginis - -	4½	13 2 31.36	4 46 21.3			
4	Mars - - - -	S.	12 48 34.61	2 16 20.4	0.47	7.1	13.7
	46 Virginis - -	6½	12 53 12.81	2 35 44.2			
	θ Virginis - -	4½	13 2 31.37	4 46 21.3			
5	Mars - - - -	N.	12 47 6.79	2 9 4.3	0.47	"	
	46 Virginis - -	6½	12 53 12.81	2 35 44.2			
	θ Virginis - -	4½	13 2 31.38	S. 4 46 21.3			

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
APRIL 2, 1856.

Date.	Star.	Magnitude.	Apparent		Semidiameter in		Hor. Par.
			Right Ascension.	Declination.	R. A.	Dec.	
1856. April 6	Mars - - - -	S.	h m s	° ' "	"	"	"
	46 Virginis - -	6½	12 45 39.16	S. 2 1 53.0	0.47	7.1	13.7
	θ Virginis - -	4½	12 53 12.82	2 35 44.3			
7	Mars - - - -	N.	12 44 11.89	1 54 47.4	0.47	7.1	13.7
	46 Virginis - -	6½	12 53 12.83	2 35 44.3			
	θ Virginis - -	4½	13 2 31.38	4 46 21.4			
8	Mars - - - -	S.	12 42 45.15	1 47 48.5	0.47	7.1	13.7
	46 Virginis - -	6½	12 53 12.84	2 35 44.3			
	θ Virginis - -	4½	13 2 31.40	4 46 21.4			
9	Mars - - - -	N.	12 41 19.11	1 40 57.2	0.47	7.1	13.7
	46 Virginis - -	6½	12 53 12.84	2 35 44.3			
	θ Virginis - -	4½	13 2 31.41	4 46 21.4			
10	Mars - - - -	S.	12 39 53.95	1 34 14.7	0.47	7.1	13.7
	38 Virginis - -	6	12 45 50.51	2 46 22.8			
	k Virginis - -	6	12 52 16.27	3 2 10.9			
11	Mars - - - -	N.	12 38 29.82	1 27 41.6	0.47	7.1	13.7
	38 Virginis - -	6	12 45 50.51	2 46 22.8			
	k Virginis - -	6	12 52 16.27	3 2 10.9			
12	Mars - - - -	S.	12 37 6.86	1 21 18.7	0.47	7.1	13.7
	38 Virginis - -	6	12 45 50.51	2 46 22.8			
	k Virginis - -	6	12 52 16.28	3 2 10.9			
13	Mars - - - -	N.	12 35 45.21	1 15 7.0	0.47	7.1	13.7
	38 Virginis - -	6	12 45 50.52	2 46 22.8			
	k Virginis - -	6	12 52 16.28	3 2 10.9			
14	Mars - - - -	S.	12 34 25.02	1 9 7.0	0.47	7.0	13.6
	38 Virginis - -	6	12 45 50.52	2 46 22.8			
	k Virginis - -	6	12 52 16.29	3 2 10.9			
15	Mars - - - -	N.	12 33 6.42	1 3 19.5	0.47	7.0	13.6
	38 Virginis - -	6	12 45 50.53	2 46 22.8			
	k Virginis - -	6	12 52 16.29	3 2 10.9			
16	Mars - - - -	S.	12 31 49.57	0 57 45.3	0.47	7.0	13.6
	B.A.C. 4277 -	6	12 36 15.45	0 47 5.0			
	38 Virginis - -	6	12 45 50.53	2 46 22.8			
17	Mars - - - -	N.	12 30 34.55	0 52 24.7	0.47	7.0	13.5
	B.A.C. 4277 -	6	12 36 15.45	0 47 5.0			
	38 Virginis - -	6	12 45 50.54	2 46 22.8			
18	Mars - - - -	S.	12 29 21.47	0 47 18.5	0.47	7.0	13.5
	B.A.C. 4277 -	6	12 36 15.46	0 47 5.0			
	38 Virginis - -	6	12 45 50.54	S. 2 46 22.8			

OPPOSITION OF MARS, 1856. 535

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH
MARS, NEAR THE OPPOSITION OF THE PLANET,
APRIL 2, 1856.

Date.	Star.	Magnitude.	Apparent		Semidiameter in		Hor. Par.
			Right Ascension.	Declination.	R. A.	Dec.	
1856.			h m s	° ' "	"	"	"
April 19	Mars - - - -	N.	12 28 10.45	S. 0 42 27.0	0.46	6.9	13.4
	γ Virginis - -	4	12 34 23.51	0 39 44.2			
	B.A.C. 4277 -	6	12 36 15.46	0 47 5.0			
20	Mars - - - -	S.	12 27 1.58	0 37 50.8	0.46	6.9	13.4
	B.A.C. 4237 -	7	12 27 2.26	0 37 2.0			
	γ Virginis - -	4	12 34 23.51	0 39 44.2			
21	Mars - - - -	N.	12 25 54.97	0 33 30.3	0.46	6.9	13.3
	B.A.C. 4237 -	7	12 27 2.26	0 37 2.0			
	γ Virginis - -	4	12 34 23.51	0 39 44.2			
22	Mars - - - -	S.	12 24 50.68	0 29 25.9	0.46	6.9	13.3
	B.A.C. 4237 -	7	12 27 2.26	0 37 2.0			
	γ Virginis - -	4	12 34 23.51	0 39 44.2			
23	Mars - - - -	N.	12 23 48.81	0 25 37.9	0.46	6.8	13.2
	B.A.C. 4237 -	7	12 27 2.25	0 37 1.9			
	γ Virginis - -	4	12 34 23.51	0 39 44.1			
24	Mars - - - -	S.	12 22 49.43	0 22 6.7	0.46	6.8	13.2
	B.A.C. 4237 -	7	12 27 2.25	0 37 1.9			
	γ Virginis - -	4	12 34 23.51	0 39 44.1			
25	Mars - - - -	N.	12 21 52.61	0 18 52.5	0.46	6.8	13.1
	B.A.C. 4237 -	7	12 27 2.25	0 37 1.9			
	γ Virginis - -	4	12 34 23.51	0 39 44.1			
26	Mars - - - -	S.	12 20 58.42	0 15 55.7	0.45	6.7	13.0
	B.A.C. 4237 -	7	12 27 2.25	0 37 1.8			
	γ Virginis - -	4	12 34 23.51	0 39 44.0			
27	Mars - - - -	N.	12 20 6.91	0 13 16.4	0.45	6.7	13.0
	B.A.C. 4237 -	7	12 27 2.25	0 37 1.8			
	γ Virginis - -	4	12 34 23.50	0 39 44.0			
28	Mars - - - -	S.	12 19 18.14	0 10 54.8	0.45	6.7	12.9
	B.A.C. 4237 -	7	12 27 2.25	0 37 1.8			
	γ Virginis - -	4	12 34 23.50	0 39 44.0			
29	Mars - - - -	N.	12 18 32.15	0 8 51.2	0.44	6.6	12.8
	B.A.C. 4237 -	7	12 27 2.24	0 37 1.7			
	γ Virginis - -	4	12 34 23.50	0 39 43.9			
30	Mars - - - -	S.	12 17 48.99	0 7 5.6	0.44	6.6	12.8
	B.A.C. 4237 -	7	12 27 2.24	0 37 1.7			
	γ Virginis - -	4	12 34 23.50	0 39 43.9			
May 1	Mars - - - -	N.	12 17 8.69	0 5 58.3	0.44	6.6	12.7
	B.A.C. 4237 -	7	12 27 2.24	0 37 1.7			
	γ Virginis - -	4	12 34 23.50	S. 0 39 43.9			

MEAN TIME OF HIGH WATER AT LONDON BRIDGE,

Reckoning from Noon of each Day.

Day of the Month	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	8 14	20 49	9 10	21 50	8 17	21 2	11 12	23 51	11 51	—	0 34	13 0
2	9 19	21 50	10 28	23 12	9 50	22 38	—	12 22	0 18	12 42	1 27	13 50
3	10 20	22 53	11 53	—	11 28	—	0 49	13 13	1 4	13 27	2 14	14 38
4	11 26	23 57	0 28	12 58	0 12	12 42	1 36	13 55	1 48	14 9	3 0	15 22
5	—	12 23	1 25	13 52	1 10	13 36	2 15	14 36	2 33	14 53	3 44	16 5
6	0 50	13 15	2 16	14 40	2 0	14 22	2 57	15 18	3 15	15 36	4 27	16 48
7	1 40	14 3	3 3	15 25	2 44	15 6	3 39	15 57	3 56	16 18	5 10	17 33
8	2 26	14 51	3 47	16 7	3 25	15 46	4 18	16 37	4 38	17 1	5 57	18 17
9	3 13	15 36	4 29	16 51	4 5	16 26	4 58	17 18	5 23	17 46	6 44	19 7
10	3 58	16 21	5 11	17 33	4 48	17 7	5 41	18 3	6 11	18 38	7 33	20 1
11	4 44	17 7	5 55	18 15	5 26	17 44	6 27	18 56	7 7	19 40	8 32	21 6
12	5 31	17 55	6 35	18 57	6 5	18 28	7 27	20 2	8 15	20 57	9 35	22 2
13	6 18	18 43	7 20	19 48	6 52	19 17	8 51	21 38	9 34	22 9	10 30	22 58
14	7 7	19 32	8 17	20 57	7 46	20 25	10 22	23 5	10 43	23 15	11 26	23 54
15	8 0	20 30	9 39	22 24	9 14	22 2	11 40	—	11 40	—	—	12 16
16	9 4	21 38	11 9	23 54	10 51	23 35	0 11	12 34	0 5	12 25	0 40	13 0
17	10 15	22 52	—	12 33	—	12 16	0 54	13 12	0 43	13 1	1 22	13 43
18	11 33	—	1 2	13 29	0 46	13 10	1 30	13 46	1 19	13 38	2 4	14 24
19	0 10	12 39	1 50	14 9	1 30	13 49	2 0	14 13	1 55	14 12	2 46	15 5
20	1 6	13 33	2 29	14 45	2 6	14 21	2 27	14 43	2 28	14 46	3 29	15 47
21	1 59	14 20	3 3	15 20	2 36	14 50	2 58	15 12	3 2	15 21	4 9	16 31
22	2 41	15 2	3 34	15 47	3 3	15 18	3 29	15 42	3 38	15 56	4 53	17 17
23	3 18	15 38	4 2	16 16	3 30	15 45	3 58	16 13	4 17	16 37	5 41	18 7
24	3 54	16 11	4 31	16 45	3 58	16 12	4 30	16 48	4 58	17 21	6 33	19 1
25	4 26	16 42	4 58	17 13	4 27	16 41	5 6	17 26	5 46	18 12	7 28	20 1
26	4 58	17 13	5 27	17 42	4 54	17 9	5 49	18 12	6 42	19 11	8 32	21 5
27	5 31	17 45	5 58	18 13	5 27	17 43	6 42	19 12	7 45	20 22	9 35	22 5
28	6 3	18 19	6 31	18 52	6 3	18 25	7 51	20 35	9 4	21 38	10 38	23 11
29	6 36	18 56	7 14	19 42	6 51	19 19	9 22	22 5	10 11	22 42	11 43	—
30	7 12	19 36	-	-	7 55	20 42	10 46	23 22	11 12	23 41	0 14	12 44
31	8 1	20 34	-	-	9 33	22 22	-	-	—	12 7	-	-

If the time of High Water be required, according to the *civil* mode of reckoning:

1. *For the Morning Tide* :—With the day of the month *preceding* the given date, take the time opposite thereto from the 2nd column of the month, and diminish it by 12 hours.

2. *For the Afternoon Tide* :—With the given date, take the time opposite thereto from the 1st column of the month.

MEAN TIME OF HIGH WATER AT LONDON BRIDGE,

Reckoning from Noon of each Day.

Day of the Month	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	1 12	13 40	2 46	15 5	3 32	15 45	3 26	15 40	3 56	16 12	4 19	16 38
2	2 5	14 29	3 23	15 40	3 59	16 14	3 54	16 8	4 29	16 48	5 0	17 23
3	2 52	15 14	3 57	16 12	4 28	16 42	4 21	16 35	5 6	17 26	5 47	18 11
4	3 37	15 56	4 29	16 44	4 55	17 11	4 51	17 7	5 48	18 17	6 40	19 8
5	4 16	16 36	4 59	17 17	5 25	17 38	5 25	17 45	6 45	19 19	7 41	20 15
6	4 53	17 13	5 32	17 48	5 56	18 13	6 6	18 31	8 2	20 46	8 53	21 27
7	5 31	17 51	6 5	18 23	6 34	18 57	6 59	19 33	9 31	22 12	10 2	22 36
8	6 9	18 29	6 39	18 59	7 24	19 58	8 18	21 11	10 49	23 20	11 6	23 37
9	6 50	19 10	7 20	19 42	8 45	21 31	9 59	22 45	11 47	—	—	12 3
10	7 32	19 55	8 11	20 50	10 19	23 7	11 26	23 57	0 13	12 36	0 31	12 56
11	8 22	20 51	9 26	22 7	11 48	—	—	12 22	0 59	13 19	1 23	13 47
12	9 21	21 53	10 48	23 28	0 21	12 47	0 44	13 7	1 42	14 4	2 13	14 38
13	10 23	22 55	—	12 8	1 12	13 37	1 28	13 47	2 27	14 49	3 1	15 26
14	11 30	—	0 39	13 7	1 58	14 18	2 7	14 29	3 13	15 34	3 48	16 12
15	0 2	12 29	1 33	13 57	2 39	14 58	2 49	15 11	3 57	16 18	4 34	16 55
16	0 55	13 21	2 18	14 40	3 19	15 38	3 32	15 52	4 42	17 6	5 20	17 41
17	1 47	14 11	3 2	15 23	3 59	16 19	4 13	16 35	5 29	17 55	6 4	18 26
18	2 33	14 56	3 44	16 3	4 38	16 57	4 57	17 20	6 22	18 51	6 49	19 11
19	3 16	15 39	4 24	16 45	5 19	17 40	5 43	18 7	7 23	19 57	7 36	20 3
20	4 0	16 22	5 6	17 27	6 2	18 25	6 35	19 8	8 36	21 14	8 34	21 7
21	4 44	17 6	5 49	18 10	6 53	19 25	7 46	20 34	9 50	22 21	9 36	22 6
22	5 28	17 52	6 30	18 55	8 2	20 52	9 22	22 6	10 53	23 21	10 36	23 7
23	6 15	18 38	7 20	19 50	9 40	22 30	10 46	23 22	11 50	—	11 37	—
24	7 2	19 28	8 25	21 7	11 16	23 56	11 53	—	0 10	12 29	0 6	12 28
25	7 55	20 24	9 53	22 38	—	12 26	0 15	12 36	0 47	13 6	0 51	13 12
26	8 59	21 34	11 25	—	0 50	13 9	0 55	13 12	1 26	13 43	1 34	13 54
27	10 10	22 50	0 6	12 36	1 28	13 46	1 28	13 43	1 58	14 15	2 13	14 33
28	11 29	—	1 4	13 30	2 1	14 16	1 57	14 11	2 32	14 51	2 55	15 15
29	0 8	12 41	1 51	14 11	2 32	14 43	2 27	14 40	3 6	15 23	3 35	15 55
30	1 10	13 38	2 29	14 46	2 58	15 11	2 56	15 11	3 42	16 0	4 15	16 35
31	2 2	14 23	3 2	15 16	-	-	3	-	-	-	4 56	17 17

Example:—Required the Mean Time of Morning and Afternoon of Jan. 22, 1856

1. Opposite the day preceding, viz. is 14^h 20^m, which, being diminished Water in the Morning.

2. Opposite the given date, and in which is the Time of High Water in the

London Bridge, for the

column, u for the TARY, High

J m,

TIME OF HIGH WATER, ON THE FULL AND CHANGE OF THE MOON,
AT THE UNDERMENTIONED PORTS AND PLACES.

PLACE.	SITUATION.	Time of High Water.	PLACE.	SITUATION.	Time of High Water.
		h m			h
Aberdeen Bar	Scotland	1 11	Chausey Islands	France	6
Aberdovy	Wales	7 30	Cherbourg	France	7
Aberystwith	Wales	7 30	Chichester Harbour	England	11
Achill Head	Ireland	6 0	Christchurch Harbour	England	8
Agnes (St.)	Scilly Isles	4 30	Clear Cape	Ireland	4
Air Point	Isle of Man	11 7	Coquet Island	England	2
Aldborough	England	10 45	Cordonan	France	3
Alderney Pier	English Channel	6 45	Cork Harbour	Ireland	4
Amlwch Port	Anglesea	10 30	Cornwall Cape	England	4
Antwerp	Netherlands	4 25	Cowes	Isle of Wight	10
Arran Isle	Scotland	11 15	Cromartie	Scotland	11
Arundel Bar	England	11 15	Cuckolds Point	River Thames	2
Ballyshannon Bar	Ireland	5 30	Cuxhaven	Germany	1
Balta	Shetland	9 45	Dartmouth Harbour	England	6
Baltimore	Ireland	3 45	Deal	England	11
Banff	Scotland	0 41	Dee (River)	Scotland	0
Bantry Bay	Ireland	3 46	Dielette Harbour	France	6
Bardsey Island	Wales	8 0	Dieppe	France	11
Barmouth	Wales	7 55	Dingle Bay	Ireland	3
Barnstaple Bar	England	5 30	Donaghadee Pier	Ireland	9
Beachy Head	England	11 50	Donegal Bar	Ireland	5
Beaumaris	Wales	10 26	Douglas's Harbour	Isle of Man	11
Belfast	Ireland	10 5	Dover Pier	England	11
Berwick	England	2 18	Downing's Bay	Ireland	5
Blakeney Harbour	England	6 50	Sheephaven		
Blythe	England	2 45	Downs (Stream)	England	2
Bolt Head	England	5 45	Dublin Bar	Ireland	11
Bordeaux	France	6 52	Dunbar	Scotland	2
Boston	England	7 15	Duncansby Head	Scotland	8
Boulogne	France	11 26	Dundalk Bar	Ireland	11
Brehat Island	France	5 52	Dundee	Scotland	2
Brest Harbour	France	3 46	Dungarvon	Ireland	4
Bridgewater	England	6 45	Dungeness	England	10
Bridlington	England	4 30	Dunkerque	France	0
Bridport	England	6 0	Eddystone	English Chan.	5
Brielle	Netherlands	3 0	Exmouth Bar	England	6
Brighton	England	11 38	Eyemouth	Scotland	2
Bristol	England	7 15	Falmouth	England	5
Brouwershaven	Netherlands	2 0	Fécamp	France	10
Burnt Island	Scotland	2 30	Flamboro' Head	England	4
Caermarthen Bar	Wales	6 10	Flatholm	England	6
Calais	France	11 48	Flushing	Netherlands	1
Caldy Island	Coast of Wales	6 0	Fowey	England	5
Calf of Man	St. Geo. Channel	11 5	Galloway (Mull)	Scotland	11
Cancale Bay	France	6 9	Galway Bay	Ireland	4
Cantire (Mull)	Scotland	9 0	Glenan Islands	France	3
Cardigan Bar	Wales	7 0	Goeree (West Gat.)	Holland	1
Carlingford Bar	Ireland	10 40	Granville	France	6
Carnarvon Bar	Wales	9 20	Gravelines	France	11
Chatham	England	0 54	Gravesend	England	1

TIDES.

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TIME OF HIGH WATER, ON THE FULL AND CHANGE OF THE MOON,
AT THE UNDERMENTIONED PORTS AND PLACES.

PLACE.	SITUATION.	Time of High Water.	PLACE.	SITUATION.	Time of High Water.
		h m			h m
Peterhead	W.C. of Scotland	11 45	Peterhead	Scotland	0 45
Wormsey Pier	English Channel	6 30	Plymouth Dock Yard	England	5 33
Woolfleet	River Thames	12 0	Portland Race (Stream)	England	9 15
Woolpool	England	3 45	Portland Road	England	6 15
Woolwich	England	11 30	Port Patrick	Scotland	11 0
Woolstings	England	10 36	Portsmouth Dock Yd.	England	11 40
Wre de Grace	France	9 52	Ramsgate Harbour	England	11 20
Wigoland	German Ocean	11 45	Rathlin I., Church Bay	N. C. of Irel.	9 0
Wolveotsluis	Holland	2 0	Rye Harbour	England	10 40
Worlesley Bay	England	11 30	Salcombe	England	5 50
Wyehead Bay	Wales	10 0	Saltees	Ireland	5 40
Wy Island Harb.	England	2 30	Scalloway	Shetland	9 45
Yffleur Harbour	France	9 30	Scarborough	England	4 25
Yn Point	Jutland	13 44	Scilly Islands	England	4 32
Yn Harbour	Ireland	11 8	Selsea Harbour	England	11 15
Ynll	England	6 0	Shannon Mouth	Ireland	3 50
Ynber River Ent.	England	5 30	Sheerness Dock Yard	England	0 39
Ynwich	England	12 0	Shields	England	3 0
Ynde Bas	France	4 50	Shoreham Harbour	England	11 15
Ynsey (St. Aubin's)	English Channel	6 10	Skerries	Ireland	4 45
Ynsmare River	Ireland	3 30	Sligo Bay, Ballisadare	Ireland	5 59
Ynsg's Road	Bristol Channel	6 45	Solebay	England	10 30
Ynsgstown Harb.	Ireland	11 12	Southampton	England	11 40
Ynssale Harbour	Ireland	4 30	Spithead (Stream)	England	9 30
Ynskudbright	Scotland	11 15	Spurn Point	England	5 20
Yn Hougue Harb.	France	8 45	St. Helen's Harbour	England	11 0
Yn Ad's End	England	4 30	St. Ives	England	4 30
Ynth Pier	Scotland	2 22	St. Malo	France	6 5
Ynth Wick Harbour	Shetland	10 30	Stromness	Orkneys	9 0
Ynthvis Islands	Scotland	6 0	Sunderland	England	3 0
Yntherpool Dock	England	11 22	Swansea Bay	Wales	5 56
Ynthndon Bridge	River Thames	2 7	Tay Bar	Scotland	2 5
Ynthrgate Pier	England	0 5	Tees River Bar	England	3 30
Ynthlford Haven Ent.	Wales	5 45	Terschelling, West	Holland	8 40
Ynthnehead Pier	England	6 30	Texel, Helder Road	Holland	9 0
Ynthntrose	Scotland	1 45	E. Stream		
Ynthrlaix	N. C. of France	5 15	Torbay	England	6 5
Ynthredles Point	Isle of Wight	9 45	Tralee Bay	Ireland	3 45
Ynthrcwcastle	England	4 0	Tynemouth Bar	England	2 50
Ynthwhaven	England	11 50	Waterford Harbour	Ireland	5 50
Ynthwport	Wales	6 45	Wexford Harbour	Ireland	7 30
Ynthwupport	France	11 45	Weymouth	England	5 30
Ynthre Light (Stream)	River Thames	1 9	Whitby	England	4
Ynthfordness	England	10 40	Wick	Scotland	4
Ynthtend	Flanders	0 55	Wicklow	Ireland	4
Ynthmbroke Dock Yd.	Wales	6 4	Wisbeach	England	4
Ynthntland Frith	Scotland	10 30	Wranger Oog	England	4
Ynthnzance	England	4 30	Yarmouth Ro	England	4
			Youghall	Ireland	4

T A B L E,
SHOWING THE MEAN TIME OF THE GREATEST LIBRATION OF THE MOON
APPARENT DISC.

1856.	d	h	m	
Jan.	4	2	23	S.E.
	17	2	7	S.W.
Feb.	1	5	45	S.E.
	13	11	57	S.W.
	29	12	40	S.E.
Mar.	12	15	12	S.W.
	28	17	7	S.E.
Apr.	9	21	57	S.W.
	25	10	31	N.E.
May	8	1	59	N.W.
	22	2	36	S.E.
June	4	22	24	N.W.
	17	13	20	S.E.
July	2	4	43	N.W.
	14	20	35	S.E.
	28	14	39	S.W.
Aug.	11	17	19	S.E.
	24	8	27	S.W.
Sept.	8	21	21	N.E.
	21	2	33	N.W.
Oct.	7	4	4	N.E.
	19	7	2	N.W.
Nov.	4	7	32	N.E.
	16	13	58	N.W.
Dec.	1	18	19	N.E.
	14	17	32	N.W.
	27	21	44	N.E.

The Moon's Libration is here supposed to take place in the plane of her Orbit :- by the time of the greatest Libration of the Apparent Disc is to be understood the time at which, to an observer at the centre of Earth, the variation of the Disc from its mean state has attained its maximum.

The right-hand column indicates the quadrant of the Moon's Disc in which Libration takes place, and in which the greatest change of the Moon's surface becomes visible.

T A B L E,
SHOWING THE ILLUMINATED PORTION OF THE DISCS OF VENUS AND MARS.

1856.	VENUS.	MARS.
Jan. 15	0.657	0.907
Feb. 14	0.758	0.935
Mar. 15	0.837	0.985
Apr. 15	0.903	0.991
May 15	0.952	0.933
June 15	0.986	0.886
July 15	1.000	0.870
Aug. 15	0.992	0.872
Sept. 15	0.964	0.884
Oct. 15	0.922	0.900
Nov. 15	0.864	0.919
Dec. 15	0.793	0.938

The numbers given in this Table represent the versed sines of the illumination of the Discs, the apparent Diameter of the Planets being considered as unity.

TABLES.

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TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	At Greenwich Mean Time of δ				Limiting Parallels.
			Greenwich Mean Time of Apparent \odot in R. A. of ζ and \ast .	Apparent R. A. of ζ and \ast .	Apparent Declination of \ast .	Diff. of Apparent Dec. of ζ and \ast .	
1856.							
Jan. 2	λ Virginis -	4	h m s	h m s	° ' "	° ' "	Latitude.
4	δ Scorpii -	3	3 26 11	14 11 18.33	S. 12 42 20.9	S. 55 46	15 S. 90 S.
4	σ Scorpii -	4	3 14 38	15 51 47.86	22 12 30.0	S. 33 4	0 83 S.
4	ρ Ophiuchi	5	12 7 23	16 12 24.74	25 14 36.1	N. 69 59	65 N. 36 N.
5	A Ophiuchi	4½	14 1 52	16 16 55.65	S. 23 6 39.4	S. 73 43	55 S. 90 S.
5	A Ophiuchi	4½	10 13 13	17 6 27.89	S. 26 23 14.4	S. 12 49	11 N. 57 S.
9	ϵ Capricor.	5	14 30 48	21 28 59.23	20 6 44.3	N. 12 47	44 N. 32 S.
9	κ Capricor.	5	16 48 18	21 34 35.22	19 31 25.8	6 36	39 N. 38 S.
11	ψ Aquarii -	5	10 17 46	23 10 24.30	S. 9 58 15.4	N. 48 1	70 N. 2 S.
11	ψ Aquarii -	5	10 46 20	23 11 27.04	S. 10 24 0.1	N. 81 29	80 N. 42 N.
12	27 Piscium -	5	5 13 32	23 51 17.14	4 21 25.7	23 38	66 N. 24 S.
12	29 Piscium -	5	6 42 18	23 54 25.80	S. 3 49 50.9	16 45	59 N. 29 S.
13	e Piscium -	5	14 26 9	1 0 56.72	N. 4 53 10.9	N. 19 40	63 N. 26 S.
14	54 Ceti - -	6	10 38 55	1 43 13.43	N. 10 19 42.2	N. 11 0	54 N. 31 S.
15	π Arietis -	5	13 48 27	2 41 15.69	16 51 52.2	N. 3 3	47 N. 34 S.
15	δ Arietis -	4	23 53 59	3 3 24.15	19 10 50.8	S. 10 0	34 N. 43 S.
16	ζ Arietis -	5	1 21 27	3 6 37.86	N. 20 30 35.7	S. 72 26	36 S. 69 S.
16	τ Arietis -	5	4 11 15	3 12 55.23	N. 20 37 37.3	S. 46 31	1 S. 69 S.
18	136 Tauri - -	4½	21 2 0	5 44 17.61	27 34 31.9	N. 2 27	46 N. 15 S.
20	47 Geminor.	6	5 48 0	7 2 28.23	27 5 26.9	N. 26 14	75 N. 6 N.
20	i Geminor.	4	11 55 32	7 16 47.98	N. 28 4 53.1	S. 52 13	13 S. 62 S.
20	v Geminor.	5	16 21 9	7 27 3.97	N. 27 12 47.2	S. 17 12	26 N. 37 S.
21	ϕ Geminor.	5	0 2 36	7 44 42.02	27 8 8.0	48 39	8 S. 63 S.
21	ψ Cancri -	4	7 37 7	8 1 47.74	25 56 31.7	S. 20 15	23 N. 44 S.
21	λ Cancri -	6	12 11 54	8 11 59.28	N. 24 28 22.3	N. 38 18	90 N. 10 N.
23	η Leonis -	3½	16 8 35	9 59 29.66	N. 17 27 44.9	S. 27 21	17 N. 64 S.
26	13 Virginis -	6	17 5 36	12 11 17.90	0 0 44.4	N. 69 24	90 N. 31 N.
26	η Virginis -	3½	17 48 38	12 12 32.78	N. 0 7 57.1	N. 52 15	90 N. 7 N.
27	γ Virginis -	4	6 20 35	12 34 22.30	S. 0 39 37.6	S. 74 10	41 S. 90 S.
27	θ Virginis -	4½	22 22 3	13 2 30.04	S. 4 46 13.3	S. 49 10	4 S. 90 S.
29	λ Virginis -	4	12 1 19	14 11 19.25	12 42 26.0	74 0	46 S. 90 S.
31	δ Scorpii -	3	12 50 34	15 51 48.76	22 12 33.0	S. 47 53	15 S. 90 S.
31	σ Scorpii -	4	21 54 58	16 12 25.63	S. 25 14 38.4	N. 56 4	65 N. 10 N.
Feb. 1	A Ophiuchi	4½	20 27 20	17 6 28.70	S. 26 23 15.5	S. 24 8	-
2	3 Sagittarii	5	9 6 47	17 38 28.49	27 46 22.0	N. 8 53	-
2	B.A.C. 6127	5	17 0 45	17 58 56.44	28 28 11.0	N. 33 20	-
3	ϕ Sagittarii	4½	7 17 1	18 36 38.18	S. 27 8 12.1	S. 48 47	-

TABLES.

TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and ♀.				At Greenwich Mean Time of ♄			Limit Parall.
			♄	♂	♂	♂	♄	♂	♂	
1856.			h m s	h m s	o ' "	♄	♂	♂	Latitude	
Feb. 3	♄ Sagittarii	4	15 14 39	18 57 55.40	S. 27 52 42.7	N. 11 37			28 N. 3	
8	♄ Piscium -	5	13 40 22	23 51 16.95	4 21 26.6	37 51			82 N. 1	
8	♄ Piscium -	5	15 6 4	23 54 25.61	S. 3 49 51.9	31 10			74 N. 1	
9	♄ Piscium -	5	21 45 4	1 0 56.43	N. 4 53 9.4	N. 36 49			83 N. 1	
11	♄ Arietis -	5	19 51 3	2 41 15.32	N. 16 51 51.0	N. 20 36			65 N. 1	
12	♄ Arietis -	4	5 45 41	3 3 23.77	19 10 49.9	N. 7 8			51 N. 2	
12	♄ Arietis -	5	7 11 46	3 6 37.49	20 30 34.8	S. 55 22			10 S. 6	
12	♄ Arietis -	5	9 59 0	3 12 54.86	N. 20 37 36.4	S. 29 37			17 N. 6	
15	♄ Tauri -	4½	2 35 57	5 44 17.39	N. 27 34 33.0	N. 14 3			59 N.	
16	♄ Geminor.	6	11 39 13	7 2 28.19	27 5 28.2	N. 34 18			90 N. 1	
16	♄ Geminor.	4	17 50 46	7 16 47.98	28 4 54.5	S. 44 52			4 S. 6	
16	♄ Geminor.	5	22 19 22	7 27 3.99	N. 27 12 48.5	S. 10 22			33 N. 3	
17	♄ Geminor.	5	6 6 1	7 44 42.07	N. 27 8 9.3	S. 42 44			1 S. 6	
17	♄ Cancri -	6	9 27 41	7 52 14.19	25 47 5.7	N. 19 53			67 N.	
17	♄ Cancri -	4	13 45 41	8 1 47.85	25 56 32.8	S. 15 15			28 N. 3	
19	♄ Leonis -	3½	22 46 50	9 59 30.05	N. 17 27 44.0	S. 29 47			15 N. 6	
23	♄ Virginis -	3½	0 35 21	12 12 33.44	N. 0 7 52.9	N. 40 48			90 N.	
24	♄ Virginis -	4½	5 11 47	13 2 30.79	S. 4 46 18.0	S. 63 1			22 S. 9	
24	♄ Virginis -	6	18 4 37	13 25 24.10	9 25 26.2	N. 40 27			79 N.	
27	B.A.C. 5254	6	17 48 39	15 45 22.43	S. 23 32 45.8	N. 43 49			66 N.	
27	♄ Scorpii -	3	20 46 50	15 51 49.69	S. 22 12 36.2	S. 63 8			34 S. 9	
28	♄ Scorpii -	4	6 4 40	16 12 26.61	25 14 41.2	N. 41 10			65 N.	
28	♄ Scorpii -	1½	9 40 25	16 20 35.09	26 6 36.2	N. 65 37			64 N. 3	
29	A. Ophiuchi	4½	5 14 22	17 6 29.67	S. 26 23 17.0	S. 37 53			13 S. 9	
29	3 Sagittarii	5	18 16 25	17 38 29.40	S. 27 46 22.7	S. 4 1			14 N. 4	
Mar. 1	B.A.C. 6127	5	2 24 42	17 58 57.36	28 28 11.1	N. 21 1			36 N. 2	
1	♄ Sagittarii	4½	17 6 30	18 36 39.00	27 8 11.6	S. 59 54			40 S. 9	
2	♄ Sagittarii	4	1 17 53	18 57 56.21	S. 27 52 41.6	N. 1 13			19 N. 4	
2	♄ Sagittarii	5	20 29 47	19 48 5.50	S. 27 32 58.3	N. 69 54			62 N. 3	
4	♄ Capricor.	5	11 58 50	21 28 59.74	S. 20 6 41.0	13 35			45 N. 3	
8	♄ Piscium -	5	7 38 43	1 0 56.23	N. 4 53 8.5	46 31			90 N.	
10	♄ Arietis -	5	4 7 7	2 41 14.94	N. 16 51 49.5	N. 33 19			80 N.	
10	♄ Arietis -	6	6 55 11	2 47 42.61	N. 17 44 48.3	N. 18 20			62 N. 20	
10	♄ Arietis -	6	7 10 31	2 48 18.06	17 26 49.1	39 45			90 N. 2	
15	♄ Arietis -	4	13 40 40	3 3 23.37	19 10 48.5	N. 20 4			64 N. 17	
15	♄ 793 -	5	15 3 45	3 6 37.08	N. 20 30 33.4	S. 42 25			5 N. 60	

TABLES.

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TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	At Greenwich Mean Time of ☾				Limiting Parallels.
			Greenwich Mean Time of Apparent ☾ in R. A. of ☿ and ♄.	Apparent R. A. of ☿ and ♄.	Apparent Declination of ♄.	Diff. of Apparent Dec. of ☿ and ♄.	
			h m s	h m s	° ' "	☾	Latitude.
1856.							
Mar. 10	♄ Arietis -	5	17 45 13	3 12 54.45	N. 20 37 35.1	S. 16 37	29 N. 48 S.
11	♄ Tauri -	5	4 18 37	3 37 46.64	23 29 53.5	69 39	30 S. 67 S.
11	♄ Tauri -	3	4 47 34	3 38 55.27	23 39 29.5	74 11	40 S. 66 S.
11	♄ Tauri -	5	5 29 57	3 40 35.82	N. 23 36 41.2	S. 64 0	21 S. 66 S.
11	♄ Tauri -	6	8 49 59	3 48 31.43	N. 22 45 21.6	N. 21 8	66 N. 12 S.
12	♄ Tauri -	2	21 32 5	5 17 11.59	28 29 2.2	S. 64 5	28 S. 62 S.
13	♄ Tauri -	4½	8 40 31	5 44 16.94	27 34 33.4	N. 25 50	75 N. 6 N.
14	♄ Geminor.	4	23 32 40	7 16 47.64	N. 28 4 56.1	S. 34 59	8 N. 56 S.
15	♄ Geminor.	5	4 0 28	7 27 3.67	N. 27 12 50.1	S. 0 45	43 N. 22 S.
15	♄ Geminor.	5	11 46 29	7 44 41.79	27 8 11.0	S. 33 35	10 N. 57 S.
15	♄ Cancri -	6	15 8 9	7 52 13.92	25 47 7.3	N. 28 49	80 N. 3 N.
15	♄ Cancri -	4	19 26 21	8 1 47.60	N. 25 56 34.5	S. 6 35	37 N. 31 S.
18	♄ Leonis -	3½	4 43 56	9 59 30.08	N. 17 27 44.9	S. 25 31	19 N. 62 S.
21	♄ Virginis -	3½	6 46 2	12 12 33.78	N. 0 7 51.0	N. 38 20	90 N. 8 S.
22	♄ Virginis -	4½	11 19 11	13 2 31.25	S. 4 46 20.7	S. 67 45	29 S. 90 S.
26	♄ Scorpii -	3	3 0 9	15 51 50.54	S. 22 12 39.2	S. 71 31	52 S. 90 S.
26	♄ Scorpii -	4	12 24 12	16 12 27.48	S. 25 14 43.8	N. 32 41	59 N. 12 S.
26	♄ Scorpii -	1½	16 2 47	16 20 35.97	26 6 38.7	N. 57 8	64 N. 17 N.
27	♄ Ophiuchi	4½	11 56 30	17 6 30.58	26 23 18.5	S. 46 21	22 S. 90 S.
27	♄ Ophiuchi	6	15 13 39	17 14 18.90	S. 27 59 58.2	N. 35 44	57 N. 8 S.
28	♄ Sagittarii	5	1 15 52	17 38 30.37	S. 27 46 23.4	S. 12 22	7 N. 57 S.
28	B. A. C. 6127	5	9 36 32	17 58 58.31	28 28 11.3	N. 12 48	28 N. 31 S.
29	♄ Sagittarii	4½	0 43 34	18 36 39.94	27 8 10.8	S. 67 51	53 S. 90 S.
29	♄ Sagittarii	4	9 10 22	18 57 57.11	S. 27 52 40.3	S. 6 33	12 N. 51 S.
30	♄ Sagittarii	5	5 1 11	19 48 6.37	S. 27 32 55.8	N. 62 44	62 N. 22 N.
31	♄ Capricor.	6	17 44 52	21 19 4.44	21 49 2.9	59 36	68 N. 13 N.
31	♄ Capricor.	5	21 52 2	21 29 0.33	20 6 37.6	8 18	41 N. 37 S.
Apr. 1	♄ Capricor.	5	0 12 4	21 34 36.29	S. 19 31 19.1	N. 3 0	37 N. 41 S.
2	♄ Aquarii -	5	17 26 7	23 10 24.58	S. 9 58 11.8	N. 60 30	80 N. 9 N.
6	♄ Arietis -	4	23 44 3	3 3 23.13	N. 19 10 47.3	N. 24 34	69 N. 14 S.
7	♄ Arietis -	5	1 4 41	3 6 36.83	20 30 32.0	S. 37 53	10 N. 67 S.
7	♄ Arietis -	5	3 4 19	3 12 54.18	N. 20 37 33.7	S. 12 0	33 N. 44 S.
7	♄ Tauri -	5	13 55 3	3 37 46.33	N. 23 29 52.1	S. 64 47	21 S. 67 S.
7	♄ Tauri -	3	14 23 5	3 38 54.96	23 39 28.2	69 18	28 S. 66 S.
7	♄ Tauri -	5	15 4 7	3 40 35.50	23 36 39.8	59 6	14 S. 66 S.
9	♄ Tauri -	2	5 48 10	5 17 11.12	N. 28 29 1.4	S. 58 49	18 S. 62 S.

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TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R. A. of ♄ and *.	At Greenwich Mean Time of ♄			Limiting Parallels
				Apparent R. A. of ♄ and *.	Apparent Declination of *.	Diff. of Apparent Dec. of ♄ and *.	
1856.			h m s	h m s	° ' "	♄	Latitude
Apr. 9	136 Tauri - -	4½	16 36 11	5 44 16.47	N. 27 34 33.1	N. 31 6	82 N. 10
11	ε Geminor.	4	6 29 36	7 16 47.16	28 4 57.0	S. 30 2	14 N. 50
11	ν Geminor.	5	10 52 12	7 27 3.21	27 12 51.1	N. 4 9	49 N. 17
11	φ Geminor.	5	18 30 1	7 44 41.34	N. 27 8 12.3	S. 28 48	15 N. 51
12	ψ Cancri -	4	2 2 50	8 1 47.16	N. 25 56 36.0	S. 1 56	42 N. 27
14	η Leonis -	3½	10 57 18	9 59 29.84	17 27 46.7	S. 22 8	23 N. 58
17	13 Virginis -	6	12 22 3	12 11 18.96	0 0 37.9	N. 56 55	90 N. 12
17	η Virginis -	3½	13 5 6	12 12 33.86	N. 0 7 50.7	N. 39 36	90 N. 7
17	MARS - -	-	23 3 34	12 29 56.71	S. 0 49 45.4	S. 43 26	2 N. 90
18	θ Virginis -	4½	17 35 35	13 2 31.45	4 46 21.6	S. 67 11	27 S. 90
22	δ Scorpæ -	3	8 41 57	15 51 51.20	22 12 41.2	S. 71 59	53 S. 90
22	σ Scorpæ -	4	18 2 57	16 12 28.20	S. 25 14 45.9	N. 32 13	59 N. 12
22	α Scorpæ -	1½	21 40 36	16 20 36.71	S. 26 6 40.6	N. 56 40	64 N. 16
23	A Ophiuchi	4½	17 32 0	17 6 31.41	26 23 19.6	S. 46 46	22 S. 90
24	3 Sagittarii	5	6 53 13	17 38 31.25	27 46 23.9	S. 12 44	7 N. 58
24	B.A.C. 6127	5	15 16 41	17 58 59.21	S. 28 28 11.4	N. 12 29	28 N. 32
25	φ Sagittarii	4½	6 32 21	18 36 40.87	S. 27 8 9.9	S. 68 5	54 S. 90
25	τ Sagittarii	4	15 6 4	18 57 58.05	27 52 39.0	S. 6 42	12 N. 51
26	b Sagittarii	5	11 19 14	19 48 7.30	27 32 53.3	N. 62 45	62 N. 23
28	ε Capricor.	5	5 19 42	21 29 1.16	S. 20 6 33.2	N. 8 39	41 N. 36
28	κ Capricor.	5	7 44 26	21 34 37.08	S. 19 31 14.8	N. 3 21	37 N. 41
30	ψ Aquarii -	5	2 24 42	23 10 25.19	9 58 7.3	61 1	80 N. 11
30	27 Piscium -	5	21 11 9	23 51 17.63	4 21 20.6	43 22	85 N. 7
30	29 Piscium -	5	22 38 4	23 54 26.26	S. 3 49 46.1	N. 36 59	82 N. 13
30	JUPITER -	-	23 27 9	23 56 12.75	S. 1 36 5.4	S. 82 27	39 S. 90
May 2	e Piscium -	5	5 7 35	1 0 56.63	N. 4 53 11.4	N. 48 26	90 N. 2
6	β Tauri - -	2	15 34 50	5 17 10.88	28 29 0.3	S. 60 44	20 S. 62
7	136 Tauri - -	4½	2 7 32	5 44 16.18	N. 27 34 32.2	N. 28 56	78 N. 8
8	47 Geminor.	6	9 11 13	7 2 26.97	N. 27 5 30.1	N. 46 46	90 N. 25
8	ε Geminor.	4	15 4 33	7 16 46.77	28 4 57.1	S. 32 55	11 N. 53
8	ν Geminor.	5	19 20 54	7 27 2.81	27 12 51.3	N. 1 11	45 N. 20
9	φ Geminor.	5	2 48 8	7 44 40.93	N. 27 8 12.7	S. 31 54	12 N. 55
9	ψ Cancri -	4	10 11 0	8 1 46.76	N. 25 56 36.6	S. 5 9	39 N. 30
11	η Leonis -	3½	18 12 38	9 59 29.51	17 27 48.4	S. 25 56	19 N. 62
14	η Virginis -	3½	20 7 16	12 12 33.75	N. 0 7 51.6	N. 36 38	89 N. 9
14	MARS - -	-	20 18 3	12 12 52.52	S. 0 15 34.2	N. 57 32	90 N. 14

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TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	At Greenwich Mean Time of δ				Limiting Parallels.
			Greenwich Mean Time of Apparent ζ in R. A. of (ζ and *.	Apparent R. A. of (ζ and *.	Apparent Declination of *.	Diff. of Apparent Dec. of (ζ and *.	
			h m s	h m s	° ' "	' "	Latitude.
1856.							
May 16	θ Virginis -	4½	0 37 47	13 2 31 45	S. 4 46 21 2	S. 69 15	31 S. 90 S.
19	B.A.C. 5253	6	12 12 14	15 45 20 33	24 6 15 1	N. 70 34	66 N. 41 N.
19	B.A.C. 5254	6	12 14 5	15 45 24 37	23 32 52 8	N. 36 54	65 N. 8 S.
19	δ Scorpii -	3	15 10 39	15 51 51 65	S. 22 12 42 5	S. 69 57	47 S. 90 S.
20	σ Scorpii -	4	0 24 41	16 12 28 74	S. 25 14 47 5	N. 34 44	61 N. 10 S.
20	α Scorpii -	1½	3 59 32	16 20 37 27	26 6 42 3	N. 59 22	64 N. 20 N.
20	A Ophiuchi	4½	23 35 15	17 6 32 07	26 23 20 5	S. 43 5	18 S. 90 S.
21	γ Sagittarii	5	12 46 13	17 38 31 98	S. 27 46 24 5	S. 8 24	10 N. 53 S.
21	B.A.C. 6127	5	21 3 45	17 59 0 00	S. 28 28 11 6	N. 17 12	32 N. 27 S.
22	ρ Sagittarii	4½	12 10 4	18 36 41 71	27 8 9 2	S. 62 39	45 S. 90 S.
22	τ Sagittarii	4	20 39 43	18 57 58 93	27 52 37 9	S. 0 53	17 N. 45 S.
23	β Sagittarii	5	16 47 34	19 48 8 23	S. 27 32 51 1	N. 69 25	62 N. 36 N.
24	B.A.C. 7237	6	16 2 13	20 44 35 73	S. 24 19 9 1	N. 61 0	66 N. 18 N.
25	ϵ Capricor.	5	11 1 58	21 29 2 06	20 6 28 7	16 40	49 N. 29 S.
25	κ Capricor.	5	13 28 39	21 34 37 98	19 31 10 3	11 26	45 N. 34 S.
27	ψ Aquarii -	5	9 2 2	23 10 26 00	S. 9 58 1 9	N. 69 9	80 N. 21 N.
28	γ Piscium -	5	4 20 27	23 51 18 40	S. 4 21 15 3	N. 50 55	86 N. 0
28	γ Piscium -	5	5 49 59	23 54 27 03	S. 3 49 40 9	N. 44 28	82 N. 6 S.
28	JUPITER -	-	15 47 49	0 15 26 60	N. 0 23 28 9	S. 39 51	10 N. 88 S.
29	ϵ Piscium -	5	13 14 56	1 0 57 27	N. 4 53 15 5	N. 54 9	90 N. 4 N.
31	π Arietis -	5	10 21 42	2 41 15 34	N. 16 51 50 3	N. 38 51	89 N. 3 S.
31	δ Arietis -	4	19 46 42	3 3 23 61	19 10 48 1	N. 24 53	70 N. 13 S.
31	ζ Arietis -	5	21 8 6	3 6 37 30	20 30 32 4	S. 37 43	10 N. 67 S.
31	τ Arietis -	5	23 45 57	3 12 54 62	N. 20 37 34 1	S. 12 8	33 N. 44 S.
June 5	ϵ Geminor.	4	0 24 56	7 16 46 62	N. 28 4 56 3	S. 40 5	4 N. 61 S.
5	ν Geminor.	5	4 37 42	7 27 2 65	27 12 50 8	S. 6 16	38 N. 27 S.
5	ζ Geminor.	6	8 3 37	7 35 19 66	26 7 30 9	N. 42 12	90 N. 16 N.
5	ρ Geminor.	5	11 58 23	7 44 40 74	N. 27 8 12 2	S. 39 50	4 N. 62 S.
5	ψ Cancri -	4	19 14 30	8 1 46 54	N. 25 56 36 4	S. 13 33	31 N. 38 S.
8	η Leonis -	3½	2 27 30	9 59 29 22	17 27 49 7	S. 37 2	8 N. 73 S.
11	η Virginis -	3½	3 57 10	12 12 33 54	N. 0 7 53 1	N. 25 32	
15	δ Scorpii -	3	22 59 6	15 51 51 87	S. 22 12 43 3	S. 72 1	
16	σ Scorpii -	4	8 8 50	16 12 29 01	S. 25 14 48 6	N. 33	
16	α Scorpii -	1½	11 41 45	16 20 37 56	26 6 43 5	N. 58	
17	A Ophiuchi	4½	7 4 18	17 6 32 50	26 23 21 4	S. 4	
17	43 Ophiuchi	6	10 16 29	17 14 20 90	S. 28 0 1 4	N. 5	

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TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R.A. of (and #.		At Greenwich Mean Time of ♄			Limiting Parallels.
			h m s	h m s	Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
1856.								Latitude.
June 17	3 Sagittarii	5	20 4 11	17 38 32.49	S. 27 46 25.2	S. 5 58	12 N. 50 S.	
18	B.A.C. 6127	5	4 13 58	17 59 0.58	28 28 12.3	N. 20 30	35 N. 24 S.	
18	♁ Sagittarii	4½	19 4 59	18 36 42.35	27 8 9.1	S. 57 48	38 S. 90 S.	
19	τ Sagittarii	4	3 25 35	18 57 59.65	S. 27 52 37.6	N. 4 50	23 N. 39 S.	
20	B.A.C. 7077	6	13 44 14	20 24 19.84	S. 25 25 36.3	N. 59 51	65 N. 17 N.	
21	♄ Capricor.	5	16 47 26	21 29 2.94	20 6 24.9	28 18	60 N. 18 S.	
21	κ Capricor.	5	19 12 27	21 34 38.87	19 31 6.3	23 15	56 N. 23 S.	
23	ψ Aquarii -	5½	13 35 5	23 8 22.09	S. 9 52 8.7	N. 61 50	80 N. 13 N.	
23	ψ Aquarii -	5	14 33 43	23 10 26.88	S. 9 57 56.4	N. 83 19	80 N. 50 N.	
24	27 Piscium -	5	9 58 34	23 51 19.27	4 21 9.6	65 16	86 N. 16 N.	
24	29 Piscium -	5	11 28 54	23 54 27.90	S. 3 49 35.1	58 48	86 N. 9 N.	
25	JUPITER -	-	4 11 33	0 29 17.13	N. 1 45 47.7	N. 3 19	47 N. 41 S.	
25	ε Piscium -	5	19 20 14	1 0 58.10	N. 4 53 20.8	N. 67 18	90 N. 20 N.	
26	54 Ceti - -	6	15 12 6	1 43 14.38	10 19 48.1	58 55	90 N. 12 N.	
27	π Arietis -	5	17 26 6	2 41 16.08	16 51 53.5	47 48	90 N. 6 N.	
28	δ Arietis -	4	3 4 21	3 3 24.11	N. 19 10 50.9	N. 32 41	80 N. 6 S.	
28	ζ Arietis -	5	4 27 46	3 6 38.04	N. 20 30 35.0	S. 30 3	17 N. 61 S.	
28	τ Arietis -	5	7 9 18	3 12 55.34	20 37 36.5	4 48	39 N. 37 S.	
28	17 Tauri - -	4½	17 2 28	3 36 20.10	23 39 33.0	76 4	46 S. 66 S.	
28	23 Tauri - -	5	17 38 53	3 37 47.33	N. 23 29 53.0	S. 60 2	16 S. 67 S.	
28	η Tauri - -	3	18 7 31	3 38 55.96	N. 23 39 28.8	S. 64 39	22 S. 66 S.	
28	27 Tauri - -	5	18 49 23	3 40 36.49	23 36 40.6	54 38	9 S. 66 S.	
30	β Tauri - -	2	9 42 46	5 17 11.47	28 28 58.8	S. 63 24	25 S. 62 S.	
30	136 Tauri - -	4½	20 21 7	5 44 16.62	N. 27 34 30.8	N. 24 6	71 N. 4 N.	
July 5	η Leonis -	3½	10 57 7	9 59 29.06	N. 17 27 50.1	S. 49 52	5 S. 73 S.	
6	l Leonis -	6	9 5 4	10 41 41.66	11 18 22.4	N. 39 46	90 N. 3 S.	
8	η Virginis -	3½	12 6 54	12 12 33.30	N. 0 7 54.6	9 4	53 N. 35 S.	
9	MARS - -	-	20 49 40	13 9 47.00	S. 8 1 25.2	N. 43 41	69 N. 2 S.	
13	σ Scorpii -	4	16 57 43	16 12 29.01	S. 25 14 49.4	N. 24 57	51 N. 20 S.	
13	α Scorpii -	1½	20 31 15	16 20 37.59	26 6 44.4	N. 50 22	64 N. 8 N.	
14	A Ophiuchi	4½	15 54 39	17 6 32.63	26 23 22.3	S. 47 42	23 S. 90 S.	
15	3 Sagittarii	5	4 52 16	17 38 32.70	S. 27 46 26.3	S. 10 0	9 N. 55 S.	
15	B.A.C. 6127	5	12 59 19	17 59 0.83	S. 28 28 13.3	N. 17 31	32 N. 27 S.	
16	♁ Sagittarii	4½	3 42 49	18 36 42.71	27 8 9.7	S. 58 48	39 S. 90 S.	
16	τ Sagittarii	4	11 57 43	18 58 0.05	27 52 38.1	N. 4 58	23 N. 39 S.	
19	ε Capricor.	5	0 10 57	21 29 3.68	S. 20 6 22.4	N. 37 5	67 N. 11 S.	

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TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ☾ in R. A. of (and #.		At Greenwich Mean Time of ☽			Limiting Parallels.
			Apparent R. A. of (and #.	Apparent Declination of *.	Diff. of Apparent Dec. of (and #.			
1856.								
July 19	κ Capricor.	5	h m s	h m s	° ' "	° ' "	Latitude.	
21	27 Piscium -	5	2 32 38	21 34 39.60	S. 19 31 3.7	N. 32 21	64 N. 15 S.	
21	29 Piscium -	5	15 58 27	23 51 20.11	N. 4 21 4.3	80 59	86 N. 39 N.	
22	JUPITER -	-	17 27 18	23 54 28.74	S. 3 49 29.8	74 37	86 N. 28 N.	
			13 0 3	0 35 46.48	N. 2 18 59.6	N. 38 43	87 N. 11 S.	
24	π Arietis -	5	23 2 52	2 41 16.95	N. 16 51 57.8	N. 62 24	90 N. 22 N.	
25	δ Arietis -	4	8 46 14	3 3 25.02	19 10 54.6	N. 46 28	90 N. 7 N.	
25	ζ Arietis -	5	10 10 29	3 6 38.91	20 30 38.6	S. 16 24	29 N. 48 S.	
25	τ Arietis -	5	12 53 46	3 12 56.21	N. 20 37 39.9	N. 8 37	53 N. 26 S.	
25	τ ¹ Arietis -	6	13 34 4	3 14 29.62	N. 20 13 35.4	N. 40 27	90 N. 3 N.	
25	65 Arietis -	6	14 16 57	3 16 9.18	20 17 29.1	N. 44 45	90 N. 7 N.	
25	17 Tauri -	4½	22 54 11	3 36 20.96	23 39 35.8	S. 63 39	21 S. 66 S.	
25	20 Tauri -	5	23 17 49	3 37 16.80	N. 23 55 0.1	S. 75 0	44 S. 66 S.	
25	23 Tauri -	5	23 31 6	3 37 48.19	N. 23 29 55.7	S. 47 40	2 S. 67 S.	
26	η Tauri -	3	0 0 7	3 38 56.85	23 39 31.7	52 21	7 S. 66 S.	
26	27 Tauri -	5	0 42 33	3 40 37.37	23 36 43.4	42 24	4 N. 66 S.	
27	β Tauri -	2	16 13 48	5 17 12.20	N. 28 28 59.2	S. 55 38	14 S. 62 S.	
28	136 Tauri -	4½	3 3 27	5 44 17.32	N. 27 34 30.9	N. 30 32	81 N. 10 N.	
Aug. 3	σ Leonis -	4	10 30 1	11 13 43.20	6 49 2.5	N. 60 43	90 N. 18 N.	
4	η Virginis -	3½	19 55 22	12 12 33.09	N. 0 7 55.9	S. 5 59	38 N. 50 S.	
7	MARS -	-	12 32 3	14 7 22.81	S. 13 58 9.6	S. 32 39	9 N. 83 S.	
10	σ Scorpil -	4	1 52 49	16 12 28.74	S. 25 14 49.6	N. 11 50	38 N. 32 S.	
10	α Scorpil -	1½	5 29 39	16 20 37.33	26 6 44.8	N. 37 33	62 N. 6 S.	
11	A Ophiuchi	4½	1 10 21	17 6 32.44	26 23 23.0	S. 58 49	37 S. 90 S.	
11	3 Sagittarii	5	14 18 15	17 38 32.58	S. 27 46 27.3	S. 19 50	0 66 S.	
11	B.A.C. 6127	5	22 30 57	17 59 0.76	S. 28 28 14.5	N. 8 32	23 N. 36 S.	
12	φ Sagittarii	4½	13 22 29	18 36 42.71	27 8 10.8	S. 66 10	49 S. 90 S.	
12	τ Sagittarii	4	21 40 27	18 58 0.11	27 52 39.3	S. 1 25	17 N. 46 S.	
13	δ Sagittarii	5	17 11 29	19 48 9.74	S. 27 32 50.8	N. 76 7	62 N. 55 N.	
15	ε Capricor.	5	9 36 32	21 29 4.07	S. 20 6 21.8	N. 38 54	69 N. 9 S.	
15	κ Capricor.	5	11 56 3	21 34 40.02	19 31 2.9	34 33	66 N. 13 S.	
18	29 Piscium -	5	1 21 18	23 54 29.42	S. 3 49 25.8	85 33	86 N. 47 N.	
18	JUPITER -	-	19 17 35	0 33 31.66	N. 1 56 15.7	N. 56 8	90 N. 4 1	
19	ε Piscium -	4	5 24 33	0 55 30.93	N. 7 7 7.6	S. 79 6	34 S. °	
19	π Piscium -	5	20 57 23	1 29 30.55	11 24 31.0	S. 75 25	29 S	
21	π Arietis -	5	4 57 35	2 41 17.85	16 52 2.3	N. 77 0	90 3	
21	δ Arietis -	4	14 31 37	3 3 25.98	N. 19 10 58.7	N. 60 51	90 1	

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Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	At Greenwich Mean Time of ☾				Limiting Parallels.
			Greenwich Mean Time of Apparent ☾ in R. A. of ☾ and *.	Apparent R. A. of ☾ and *.	Apparent Declination of *.	Diff. of Apparent Dec. of ☾ and *.	
1856.							
Aug. 21	ζ Arietis -	5	h m s 15 54 38	h m s 3 6 39.81	o ' " N.20 30 42.6	☾ S. 2 3	Latitude o ° 42 N. 35 S.
21	τ Arietis -	5	18 35 42	3 12 57.11	20 37 43.8	N.22 52	68 N. 13 S.
22	17 Tauri - -	4½	4 29 14	3 36 21.91	23 39 39.3	S.49 47	3 S. 66 S.
22	19 Tauri - -	5	4 37 2	3 36 40.50	N.24 0 55.0	S.69 42	30 S. 66 S.
22	20 Tauri - -	5	4 52 38	3 37 17.76	N.23 55 3.6	S.61 9	17 S. 66 S.
22	23 Tauri - -	5	5 5 47	3 37 49.14	23 29 59.2	33 50	13 N. 61 S.
22	η Tauri - -	3	5 34 30	3 38 57.76	23 39 35.0	38 31	8 N. 65 S.
22	27 Tauri - -	5	6 16 33	3 40 38.29	N.23 36 46.7	S.28 36	18 N. 56 S.
23	β Tauri - -	2	21 41 21	5 17 13.09	N.28 29 0.1	S.44 16	0 62 S.
24	136 Tauri - -	4½	8 34 7	5 44 18.16	27 34 31.3	N.41 5	90 N. 20 N.
24	κ Aurigæ -	4	17 23 40	6 6 13.52	29 32 53.0	S.67 5	35 S. 60 S.
25	47 Geminor.	6	16 22 27	7 2 28.23	N.27 5 26.5	N.46 10	90 N. 24 N.
25	ι Geminor.	4	22 21 29	7 16 47.89	N.28 4 52.5	S.35 55	8 N. 57 S.
26	ν Geminor.	5	2 41 23	7 27 3.85	27 12 47.0	3 34	41 N. 25 S.
26	φ Geminor.	5	10 13 39	7 44 41.81	27 8 8.0	39 41	4 N. 63 S.
26	ψ Cancri -	4	17 40 3	8 1 47.46	N.25 56 32.4	S.15 56	28 N. 40 S.
Sept. 1	η Virginis -	3½	2 55 17	12 12 32.97	N. 0 7 56.4	S.13 58	31 N. 58 S.
6	σ Scorpis -	4	9 49 24	16 12 28.33	S.25 14 49.0	N. 0 22	27 N. 44 S.
6	α Scorpis -	1½	13 30 31	16 20 36.92	26 6 44.3	N.26 10	51 N. 18 S.
7	A Ophiuchi	4½	9 36 49	17 6 32.04	S.26 23 23.1	S.69 33	55 S. 90 S.
7	3 Sagittarii	5	23 3 31	17 38 32.20	S.27 46 27.8	S.30 2	10 S. 82 S.
8	γ Sagittarii	4	6 11 27	17 55 52.23	29 35 7.6	N.66 51	60 N. 36 N.
8	B.A.C.6127	5	7 28 18	17 59 0.38	28 28 15.3	S. 1 16	14 N. 46 S.
9	τ Sagittarii	4	7 11 52	18 57 59.82	S.27 52 40.6	S. 9 57	10 N. 55 S.
10	δ Sagittarii	5	3 9 4	19 48 9.56	S.27 32 52.5	N.68 54	62 N. 33 N.
11	ε Capricor.	5	20 9 27	21 29 4.13	20 6 22.6	35 14	66 N. 13 S.
11	κ Capricor.	5	22 29 56	21 34 40.09	19 31 3.6	31 7	63 N. 17 S.
13	χ Aquarii -	5½	15 23 13	23 9 26.29	S. 8 30 19.2	N.11 37	53 N. 35 S.
15	JUPITER -	-	0 29 15	0 23 28.19	N. 0 46 3.3	N.49 41	90 N. 3 S.
15	ε Piscium -	4	14 50 16	0 55 31.45	7 7 11.1	S.73 5	23 S. 83 S.
16	π Piscium -	5	5 54 27	1 29 31.17	11 24 35.0	S.68 16	18 S. 79 S.
17	40 Arietis -	6	12 30 30	2 40 30.99	N.17 41 19.3	N.31 45	78 N. 9 S.
17	δ Arietis -	4	22 5 35	3 3 26.87	N.19 11 2.3	N.69 42	90 N. 32 N.
17	ζ Arietis -	5	23 25 52	3 6 40.61	20 30 46.2	6 49	51 N. 28 S.
18	τ Arietis -	5	2 1 43	3 12 57.95	20 37 47.5	N.31 46	79 N. 6 S.
18	17 Tauri - -	4½	11 36 37	3 36 22.76	N.23 39 42.6	S.40 46	7 N. 66 S.

TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of Apparent ♄ in R.A. of ♄ and *.				At Greenwich Mean Time of ♄			Limiting Parallels.		
			h	m	s	♄	♄	♄	♄		♄	
1856.												
Sept. 18	19 Tauri - -	5	11	44	10	3	36	41	35	N.24 0 58'3	S. 60 41	15 S. 66 S.
18	20 Tauri - -	5	11	59	18	3	37	18	61	23 55 6'9	52 9	5 S. 66 S.
18	23 Tauri - -	5	12	12	2	3	37	49	99	23 30 2'5	24 49	22 N. 52 S.
18	γ Tauri - -	3	12	39	53	3	38	58	61	N.23 39 38'2	S. 29 31	17 N. 57 S.
18	27 Tauri - -	5	13	20	40	3	40	39	14	N.23 36 49'9	S. 19 35	26 N. 47 S.
20	β Tauri - -	2	3	45	57	5	17	14	05	28 29 1'3	S. 35 36	9 N. 55 S.
20	136 Tauri - -	4½	14	27	16	5	44	19	08	27 34 31'9	N.49 30	90 N. 28 N.
20	κ Aurigæ - -	4	23	9	20	6	6	14	44	N.29 32 52'9	S. 58 53	19 S. 60 S.
22	ε Geminor. -	4	3	53	30	7	16	48	75	N.28 4 50'8	S. 28 39	16 N. 49 S.
22	ν Geminor. -	5	8	12	42	7	27	4	66	27 12 45'2	N. 3 33	48 N. 19 S.
22	ϵ Geminor. -	6	11	43	50	7	35	21	58	26 7 25'5	N.50 41	90 N. 25 N.
22	φ Geminor. -	5	15	44	30	7	44	42	58	N.27 8 5'9	S. 32 52	11 N. 56 S.
22	ψ Cancri - -	4	23	11	18	8	1	48	19	N.25 56 30'0	S. 9 26	35 N. 34 S.
25	γ Leonis - -	3½	7	23	23	9	59	29	73	N.17 27 45'0	54 41	11 S. 73 S.
Oct. 3	σ Scorpii - -	4	16	20	17	16	12	27	92	S.25 14 47'8	S. 4 5	23 N. 49 S.
3	α Scorpii - -	1½	20	4	0	16	20	36	50	S.26 6 43'2	N.21 42	47 N. 22 S.
5	3 Sagittarii	5	6	11	40	17	38	31	70	S.27 46 27'6	S. 34 23	14 S. 90 S.
5	γ Sagittarii	4	13	29	32	17	55	51	74	29 35 7'6	N.62 33	60 N. 28 N.
5	B.A.C.6127	5	14	48	16	17	58	59	90	28 28 15'3	S. 5 34	10 N. 50 S.
6	τ Sagittarii	4	15	10	58	18	57	59	36	S.27 52 41'5	S. 13 58	6 N. 60 S.
7	δ Sagittarii	5	11	46	3	19	48	9	15	S.27 32 54'0	N.65 14	62 N. 28 N.
9	ε Capricor. -	5	6	6	30	21	29	3	89	20 6 24'4	32 32	64 N. 15 S.
9	κ Capricor. -	5	8	31	12	21	34	39	86	19 31 5'3	28 28	61 N. 19 S.
12	JUPITER - -	-	5	48	56	0	10	23	65	S. 0 38 32'7	N.27 17	71 N. 22 S.
13	ε Piscium - -	4	1	57	29	0	55	31	73	N. 7 7 13'1	S. 72 48	22 S. 83 S.
13	κ Piscium - -	5	16	50	6	1	29	31	54	11 24 37'4	S.67 36	16 S. 79 S.
15	δ Arietis - -	4	8	2	54	3	3	27	62	19 11 5'1	N.70 59	90 N. 33 N.
15	ζ Arietis - -	5	9	20	40	3	6	41	25	N.20 30 49'1	N. 8 6	52 N. 27 S.
15	τ Arietis - -	5	11	51	40	3	12	58	58	N.20 "		N. 5 S.
15	τ Arietis - -	6	12	28	56	3	14	31	98			N.
15	17 Tauri - -	4½	21	8	0	3	36	23	46			S.
15	19 Tauri - -	5	21	15	18	3	36	42	0			S.
15	20 Tauri - -	5	21	29	56	3	37	19				
15	23 Tauri - -	5	21	42	16	3	37	50				
15	γ Tauri - -	3	22	9	11	3	38	59				
15	27 Tauri - -	5	22	48	37	3	40	37				

TABLES.

TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of	At Greenwich Mean Time of ☾			Limiting Parallels.
			Apparent ♄ in R. A. of ☾ and *.	Apparent R. A. of ☾ and *.	Apparent Declination of *.	Diff. of Apparent Dec. of ☾ and *.	
			h m s	h m s	° ' "	☾	Latitude.
1856.							
Oct. 17.	β Tauri - -	2	11 55 18	5 17 14.95	N.28 29 2.3	S.34 18	11 N. 53 S.
17	136 Tauri - -	4½	22 15 42	5 44 19.99	27 34 32.2	N.50 45	90 N. 29 N.
18	κ Aurigæ - -	4	6 41 38	6 6 15.42	29 32 52.8	S.57 42	16 S. 60 S.
18	49 Aurigæ - -	6	14 26 22	6 26 11.07	N.28 7 53.4	N.24 49	73 N. 6 N.
18	54 Aurigæ - -	6	16 8 19	6 30 31.34	N.28 23 13.6	N. 7 30	52 N. 9 S.
19	ι Geminor. - -	4	10 40 6	7 16 49.69	28 4 49.0	S.27 41	17 N. 47 S.
19	ν Geminor. - -	5	14 53 38	7 27 5.59	27 12 43.1	N. 4 28	49 N. 18 S.
19	φ Geminor. - -	5	22 16 23	7 44 43.49	N.27 8 3.4	S.32 1	13 N. 55 S.
20	ψ ² Caneri - -	4	5 35 18	8 1 49.12	N.25 56 27.0	S. 8 39	36 N. 33 S.
22	η Leonis - -	3½	13 19 29	9 59 30.40	17 27 40.7	S.54 24	10 S. 73 S.
24	σ Leonis - -	4	5 35 6	11 13 43.96	6 48 57.0	N.57 13	90 N. 14 N.
25	η Virginis - -	3½	15 16 50	12 12 33.41	N. 0 7 53.1	S.14 31	31 N. 59 S.
30	σ Scorpis - -	4	22 3 23	16 12 27.72	S.25 14 46.5	S. 1 42	25 N. 46 S.
31	α Scorpis - -	1½	1 46 33	16 20 36.28	26 6 41.8	N.24 11	49 N. 20 S.
Nov. 1	3 Sagittarii - -	5	11 57 24	17 38 31.35	27 46 26.7	S.31 10	11 S. 84 S.
1	γ ¹ Sagittarii - -	4	19 18 24	17 55 51.36	S.29 35 6.7	N.65 56	60 N. 36 N.
1	B.A.C.6127 - -	5	20 37 48	17 58 59.51	S.28 28 14.6	S. 2 9	13 N. 47 S.
2	τ Sagittarii - -	4	21 19 16	18 57 58.85	27 52 41.5	S.10 4	10 N. 55 S.
3	b Sagittarii - -	5	18 20 8	19 48 8.69	27 32 54.6	N.69 29	62 N. 38 N.
5	33 Capricor. - -	6	8 12 11	21 16 2.03	S.21 27 33.2	N.48 53	69 N. 2 N.
5	ε Capricor. - -	5	13 58 54	21 29 3.52	S.20 6 26.1	N.37 12	68 N. 10 S.
5	κ Capricor. - -	5	16 28 49	21 34 39.50	19 31 7.1	33 9	66 N. 14 S.
7	ζ Aquarii - -	5½	11 52 33	23 9 26.08	8 30 21.3	14 26	56 N. 32 S.
8	JUPITER - -	-	11 58 16	0 1 11.97	S. 1 32 41.4	N. 9 28	53 N. 37 S.
9	ε Piscium - -	4	12 51 29	0 55 31.77	N. 7 7 13.4	S.70 55	20 S. 83 S.
10	π Piscium - -	5	3 58 29	1 29 31.67	11 24 38.3	S.66 40	16 S. 79 S.
11	40 Arietis - -	6	10 1 15	2 40 31.88	17 41 23.6	N.31 51	77 N. 10 S.
11	δ Arietis - -	4	19 16 28	3 3 28.10	N.19 11 6.7	N.69 18	90 N. 30 N.
11	ζ Arietis - -	5	20 33 34	3 6 41.66	N.20 30 50.9	N. 6 19	50 N. 28 S.
11	τ ¹ Arietis - -	5	23 3 12	3 12 59.01	20 37 52.0	N.31 7	77 N. 7 S.
12	17 Tauri - -	4½	8 13 1	3 36 23.98	23 39 47.3	S.41 58	6 N. 66 S.
12	19 Tauri - -	5	8 20 13	3 36 42.58	N.24 1 3.1	S.61 53	15 S. 66 S.
12	20 Tauri - -	5	8 34 39	3 37 19.83	N.23 55 11.7	S.53 22	5 S. 66 S.
12	23 Tauri - -	5	8 46 48	3 37 51.22	23 30 7.2	26 3	21 N. 53 S.
12	η Tauri - -	3	9 13 20	3 38 59.84	23 39 42.9	30 46	17 N. 57 S.
12	27 Tauri - -	5	9 52 12	3 40 40.38	N.23 36 54.6	S.20 53	26 N. 48 S.

TABLES.

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TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	Greenwich Mean Time of		At Greenwich Mean Time of δ			Limiting Parallels.
			Apparent ζ in R. A. of ζ and \ast .	Apparent R. A. of ζ and \ast .	Apparent Declination of \ast .	Diff. of Apparent Dec. of ζ and \ast .		
1856.			h m s	h m s	° ' "	"	Latitude.	
Nov. 13	β Tauri - -	2	22 11 39	5 17 15.72	N. 28 29 3.3	S. 39 2	7 N. 58 S.	
14	ϵ Tauri - -	4½	8 14 58	5 44 20.84	27 34 32.6	N. 45 31	90 N. 23 N.	
14	κ Aurigæ -	4	16 26 12	6 6 16.29	29 32 52.9	S. 63 19	24 S. 60 S.	
15	ϵ Geminor.	4	19 34 19	7 16 50.64	N. 28 4 47.3	S. 34 28	11 N. 55 S.	
15	ν Geminor.	5	23 40 20	7 27 6.54	N. 27 12 41.1	S. 2 28	42 N. 24 S.	
16	ϕ Geminor.	5	6 50 15	7 44 44.49	27 8 0.9	S. 39 12	6 N. 62 S.	
16	ω Caneri -	6	9 57 0	7 52 16.50	25 46 57.6	N. 21 30	68 N. 6 S.	
16	ψ Caneri -	4	13 56 49	8 1 50.07	N. 25 56 24.2	S. 16 4	29 N. 40 S.	
16	λ Caneri -	6	18 16 10	8 12 1.53	N. 24 28 14.8	N. 39 16	90 N. 8 N.	
18	η Leonis -	3½	20 28 58	9 59 31.27	17 27 35.7	S. 62 49	21 S. 73 S.	
19	ι Leonis -	6	18 41 25	10 41 43.38	11 18 10.4	N. 20 23	66 N. 22 S.	
20	σ Leonis -	4	12 21 37	11 13 44.71	N. 6 48 52.0	N. 49 17	90 N. 4 N.	
21	β Virginis -	3½	5 5 10	11 43 13.62	N. 2 34 21.1	N. 70 22	90 N. 32 N.	
21	η Virginis -	3½	21 58 30	12 12 34.06	N. 0 7 48.7	S. 21 8	24 N. 67 S.	
29	B. A. C. 6127	5	2 20 39	17 58 59.42	S. 28 28 13.5	N. 4 30	19 N. 40 S.	
29	ϕ Sagittarii	4½	18 1 14	18 36 41.34	S. 27 8 11.5	S. 67 45	54 S. 90 S.	
Dec. 30	τ Sagittarii	4	2 51 9	18 57 58.71	S. 27 52 40.7	S. 1 35	17 N. 46 S.	
2	ϵ Capricor.	5	19 50 26	21 29 3.18	20 6 27.3	N. 49 37	70 N. 3 N.	
2	κ Capricor.	5	22 22 56	21 34 39.15	19 31 8.3	45 39	70 N. 1 S.	
3	α Aquarii -	6	7 31 33	21 54 35.96	S. 17 39 13.7	N. 52 4	72 N. 5 N.	
5	JUPITER -	-	19 27 11	0 0 28.12	S. 1 29 10.2	N. 12 3	56 N. 34 S.	
6	ϵ Piscium -	4	21 35 29	0 55 31.63	N. 7 7 12.6	S. 60 55	10 S. 83 S.	
7	π Piscium -	5	13 13 55	1 29 31.60	11 24 38.0	S. 58 18	8 S. 79 S.	
9	δ Arietis -	4	5 36 47	3 3 28.32	N. 19 11 7.4	N. 72 27	90 N. 36 N.	
9	ζ Arietis -	5	6 55 24	3 6 41.83	N. 20 30 51.8	N. 9 16	53 N. 26 S.	
9	τ Arietis -	5	9 27 56	3 12 59.20	20 37 52.9	N. 33 43	81 N. 4 S.	
9	γ Tauri - -	4½	18 46 59	3 36 24.23	23 39 48.6	S. 40 39	7 N. 66 S.	
9	ρ Tauri - -	5	18 54 18	3 36 42.83	N. 24 1 4.4	S. 60 35	14 S. 66 S.	
9	α Tauri - -	5	19 8 56	3 37 20.09	N. 23 55 13.0	S. 52 6	5 S. 66 S.	
9	β Tauri - -	5	19 21 16	3 37 51.47	23 30 8.4	24 48	22 N. 52 S.	
9	η Tauri - -	3	19 48 12	3 39 0.00	23 39 44.1	29 35	17 N. 56 S.	
9	δ Tauri - -	5	20 27 36	3 40 0.00	23 36 55.8	S. 19 48	26 N. 47 S.	
11	β Tauri - -	2	8 59 46		8 29 4.4	S. 42 47	3 N. 61 S.	
11	ϵ Tauri - -	4½	19 0 26		27 34 33.2	N. 40 31	90 N. 19 N.	
12	κ Aurigæ -	4	3 7 0		27 53.4	S. 69 18	24 S. 60 S.	
12	α Aurigæ -	6	10 33 0		7 52.8	N. 12 0	24 S. 5 S.	

TABLES.

TABLE,
Containing Elements for facilitating the Computation of Occultations
of certain Stars by the Moon.

Day of the Month.	Star's Name.	Magnitude.	At Greenwich Mean Time of ☾				Limiting Parallels.
			Greenwich Mean Time of Apparent ☾ in R. A. of ☾ and *.	Apparent R. A. of ☾ and *.	Apparent Declination of *.	Diff. of Apparent Dec. of ☾ and *.	
			h m s	h m s	° ' "	° ' "	Latitude.
1856.						☾	
Dec. 13	♊ Geminor.	4	5 53 40	7 16 51.49	N.28 4 46.2	S.43 31	1 N. 62 S.
13	♊ Geminor.	5	9 55 17	7 27 7.41	27 12 39.7	S.11 57	33 N. 33 S.
13	♊ Geminor.	6	13 12 15	7 35 24.32	26 7 19.3	N.34 41	87 N. 7 N.
13	♊ Geminor.	5	16 56 59	7 44 45.36	N.27 7 59.2	S.49 25	5 S. 63 S.
13	♊ Cancri -	4	23 54 54	8 1 50.96	N.25 56 22.1	S.27 0	18 N. 51 S.
16	♌ Leonis -	6	10 1 42	10 9 0.34	14 26 24.2	N.42 12	90 N. 0
17	♌ Leonis -	4½	11 36 46	10 57 38.39	8 6 30.4	78 28	90 N. 58 N.
17	♌ Leonis -	4	20 27 30	11 13 45.62	N. 6 48 46.2	N.32 59	82 N. 12 S.
18	♍ Virginis -	3½	12 59 36	11 43 14.52	N. 2 34 15.2	N.54 9	90 N. 9 N.
19	♍ Virginis -	3½	5 44 59	12 12 34.97	N. 0 7 42.7	S.36 53	10 N. 88 S.
24	♏ Scorpii -	4	11 49 17	16 12 28.45	S.25 14 46.5	S. 2 24	24 N. 47 S.
24	♏ Scorpii -	1½	15 28 44	16 20 36.97	S.26 6 41.3	N.24 15	49 N. 20 S.
30	♐ Capricor.	5	1 33 50	21 29 2.99	S.20 6 27.6	N.63 13	70 N. 19 N.
30	♐ Capricor.	5	4 4 43	21 34 38.96	19 31 8.7	N.59 33	70 N. 14 N.
30	♐ Capricor.	3½	6 5 52	21 39 7.51	16 46 36.9	S.79 7	55 S. 90 S.
31	♑ Aquarii -	5	23 12 0	23 6 54.30	S. 6 49 15.1	S.75 35	33 S. 90 S.

TABLES FOR DETERMINING THE LATITUDE BY OBSERVATIONS OF THE POLE STAR OUT OF THE MERIDIAN.

TABLE I.

Containing the *First* Correction.

Argument:—Sidereal Time of Observation.

Sidereal Time.	Correction.	Sidereal Time.	Sidereal Time.	Correction.	Sidereal Time.
h m	° ' "	h m	h m	° ' "	h m
0 0	- 1 23 49 +	12 0	6 0	- 0 25 6 +	18 0
10	1 24 50	10	10	0 21 25	10
20	1 25 42	20	20	0 17 42	20
30	1 26 23	30	30	0 13 56	30
40	1 26 55	40	40	0 10 9	40
50	1 27 16	50	50	0 6 21	50
1 0	1 27 28	13 0	7 0	- 0 2 33 +	19 0
10	1 27 29	10	10	+ 0 1 16 -	10
20	1 27 21	20	20	0 5 4	20
30	1 27 3	30	30	0 8 54	30
40	1 26 35	40	40	0 12 41	40
50	1 25 56	50	50	0 16 27	50
2 0	1 25 8	14 0	8 0	0 20 11	20 0
10	1 24 11	10	10	0 23 52	10
20	1 23 4	20	20	0 27 31	20
30	1 21 47	30	30	0 31 7	30
40	1 20 21	40	40	0 34 39	40
50	1 18 45	50	50	0 38 8	50
3 0	1 17 1	15 0	9 0	0 41 32	21 0
10	1 15 8	10	10	0 44 51	10
20	1 13 6	20	20	0 48 5	20
30	1 10 56	30	30	0 51 14	30
40	1 8 38	40	40	0 54 16	40
50	1 6 12	50	50	0 57 13	50
4 0	1 3 39	16 0	10 0	1 0 3	22 0
10	1 0 58	10	10	1 2 46	10
20	0 58 10	20	20	1 5 22	20
30	0 55 16	30	30	1 7 50	30
40	0 52 15	40	40	1 10 11	40
50	0 49 8	50	50	1 12 24	50
5 0	0 45 56	17 0	11 0	1 14 28	23 0
10	0 42 39	10	10	1 16 24	10
20	0 39 16	20	20	1 18 12	20
30	0 35 49	30	30	1 19 50	30
40	0 32 18	40	40	1 21 19	40
50	0 28 44	50	50	1 22 39	50
6 0	- 0 25 6 +			1 24 9	24 0

TABLES.

TABLE II.
Containing the *Second Correction. (always to be added.)*
Arguments:—Sidereal Time and Altitude.

Sidereal Time.	Altitude.									Sidereal Time.
	0	5	10	15	20	25	30	35		
0 0	0 0	0 0	0 1	0 1	0 2	0 3	0 3	0 4	12 4	
30	0 0	0 0	0 0	0 1	0 1	0 1	0 1	0 1	30	
1 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	13 0	
30	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	30	
2 0	0 0	0 0	0 1	0 1	0 1	0 2	0 2	0 3	14 0	
30	0 0	0 1	0 1	0 2	0 3	0 4	0 5	0 6	30	
3 0	0 0	0 1	0 3	0 4	0 5	0 7	0 9	0 11	15 0	
30	0 0	0 2	0 4	0 6	0 8	0 11	0 13	0 16	30	
4 0	0 0	0 3	0 6	0 8	0 11	0 15	0 18	0 22	16 0	
30	0 0	0 4	0 7	0 11	0 15	0 19	0 23	0 28	30	
5 0	0 0	0 4	0 9	0 13	0 18	0 23	0 28	0 34	17 0	
30	0 0	0 5	0 10	0 15	0 20	0 26	0 32	0 39	30	
6 0	0 0	0 5	0 11	0 16	0 22	0 29	0 35	0 43	18 0	
30	0 0	0 6	0 11	0 17	0 24	0 30	0 38	0 46	30	
7 0	0 0	0 6	0 12	0 18	0 24	0 31	0 39	0 47	19 0	
30	0 0	0 6	0 12	0 18	0 24	0 31	0 38	0 46	30	
8 0	0 0	0 6	0 11	0 17	0 23	0 30	0 37	0 44	20 0	
30	0 0	0 5	0 10	0 16	0 21	0 27	0 34	0 41	30	
9 0	0 0	0 5	0 9	0 14	0 19	0 24	0 30	0 36	21 0	
30	0 0	0 4	0 8	0 12	0 16	0 20	0 26	0 31	30	
10 0	0 0	0 3	0 6	0 9	0 13	0 16	0 20	0 25	22 0	
30	0 0	0 2	0 5	0 7	0 10	0 12	0 15	0 19	30	
11 0	0 0	0 2	0 3	0 5	0 7	0 9	0 11	0 13	23 0	
30	0 0	0 1	0 2	0 3	0 4	0 5	0 6	0 8	30	
12 0	0 0	0 0	0 1	0 1	0 2	0 3	0 3	0 4	24 0	

TABLE III. (for 1856.)
Containing the *Third Correction. (always to be added.)*
Arguments:—Sidereal Time and Date.

Sidereal Time.	Jan. 1.	Feb. 1.	March 1.	April 1.	May 1.	June 1.	July 1.
h	' "	' "	' "	' "	' "	' "	' "
0	1 19	1 16	1 9	0 59	0 51	0 47	0 49
2	1 20	1 22	1 19	1 11	1 2	0 54	0 51
4	1 16	1 23	1 25	1 20	1 12	1 3	0 56
6	1 8	1 18	1 23	1 24	1 19	1 11	1 1
8	0 58	1 7	1 16	1 21	1 21	1 15	1 7
10	0 48	0 55	1 4	1 13	1 17	1 16	1 10
12	0 41	0 44	0 51	1 1	1 9	1 13	1 11
14	0 40	0 38	0 41	0 49	0 58	1 6	1 9
16	0 44	0 37	0 35	0 40	0 48	0 57	1 4
18	0 52	0 42	0 37	0 36	0 41	0 49	0 59
20	1 2	0 53	0 44	0 39	0 39	0 45	0 53
22	1 12	1 5	0 56	0 47	0 43	0 44	0 50
24	1 19	1 16	1 9	0 59	0 51	0 47	0 49

TABLE II.
Containing the *Second Correction.* (*always to be added.*)
Arguments:—Sidereal Time and Altitude.

Sidereal Time.	Altitude.									Sidereal Time.
	35	40	45	50	55	60	65	70		
h m	' "	' "	' "	' "	' "	' "	' "	' "	' "	h m
0 0	0 4	0 5	0 5	0 6	0 8	0 10	0 12	0 15		12 0
30	0 1	0 1	0 2	0 2	0 2	0 3	0 4	0 5		30
1 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0		13 0
30	0 0	0 1	0 1	0 1	0 1	0 1	0 1	0 2		30
2 0	0 3	0 3	0 4	0 4	0 5	0 6	0 8	0 10		14 0
30	0 6	0 7	0 8	0 10	0 12	0 15	0 18	0 23		30
3 0	0 11	0 13	0 15	0 18	0 21	0 26	0 32	0 41		15 0
30	0 16	0 19	0 23	0 27	0 33	0 40	0 49	1 3		30
4 0	0 22	0 26	0 31	0 38	0 45	0 54	1 7	1 26		16 0
30	0 28	0 34	0 40	0 48	0 57	1 10	1 26	1 50		30
5 0	0 34	0 41	0 48	0 58	1 9	1 24	1 44	2 13		17 0
30	0 39	0 47	0 56	1 6	1 19	1 36	1 59	2 33		30
6 0	0 43	0 51	1 1	1 13	1 28	1 45	2 11	2 48		18 0
30	0 46	0 55	1 5	1 18	1 33	1 53	2 20	2 59		30
7 0	0 47	0 56	1 7	1 20	1 35	1 56	2 23	3 3		19 0
30	0 46	0 56	1 6	1 19	1 34	1 54	2 22	3 2		30
8 0	0 44	0 53	1 3	1 15	1 30	1 50	2 16	2 54		20 0
30	0 41	0 49	0 58	1 10	1 23	1 41	2 5	2 40		30
9 0	0 36	0 43	0 52	1 2	1 14	1 30	1 51	2 22		21 0
30	0 31	0 37	0 44	0 52	1 3	1 16	1 34	2 1		30
10 0	0 25	0 30	0 35	0 42	0 50	1 1	1 16	1 37		22 0
30	0 19	0 22	0 27	0 32	0 38	0 46	0 57	1 13		30
11 0	0 13	0 15	0 18	0 21	0 26	0 32	0 40	0 51		23 0
30	0 8	0 9	0 11	0 13	0 16	0 19	0 24	0 31		30
12 0	0 4	0 5	0 5	0 6	0 8	0 10	0 12	0 15		24 0

TABLE III. (*for 1856.*)
Containing the *Third Correction.* (*always to be added.*)
Arguments:—Sidereal Time and Date.

Sidereal Time.	July 1.	Aug. 1.	Sept. 1.	Oct. 1.	Nov. 1.	Dec. 1.	Dec. 31.
h	' "	' "	' "	' "	' "	' "	' "
0	0 49	0 56	1 7	1 18	1 30	1 38	1 41
2	0 51	0 53	1 0	1 9	1 21	1 32	1 39
4	0 56	0 52	0 53	0 58	1 7	1 18	1 27
6	1 1	0 53	0 48	0 47	0 51	0 58	1 8
8	1 7	0 56	0 46	0 40	0 37	0 39	0 46
10	1 10	1 0	0 48	0 38	0 30	0 26	0 29
12	1 11	1 4	0 53	0 42	0 30	0 22	0 19
14	1 9	1 7	1 0	0 51	0 39	0 28	0 21
16	1 4	1 8	" "	1 2	0 53	0 42	0 33
18	0 59	1 7			1 9	1 2	0 52
20	0 53	1 4			1 23	1 21	1 14
22	0 50	1 0			1 30	1 34	1 31
24	0 49	0 56			30	1 38	1 41

TABLE
For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS
of SIDEREAL Time.

HOURS.		MINUTES.				SECONDS.			
Hours of Mean Time.	Equivalents in Sidereal Time.	Minutes of Mean Time.	Equivalents in Sidereal Time.	Minutes of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.
1	h m s 1 0 9.8565	1	m s 1 0.1643	31	31 5.0925	1	s 1.0027	31	31.0849
2	2 0 19.7130	2	2 0.3286	32	32 5.2568	2	2.0055	32	32.0876
3	3 0 29.5694	3	3 0.4928	33	33 5.4211	3	3.0082	33	33.0904
4	4 0 39.4259	4	4 0.6571	34	34 5.5853	4	4.0110	34	34.0931
5	5 0 49.2824	5	5 0.8214	35	35 5.7496	5	5.0137	35	35.0958
6	6 0 59.1388	6	6 0.9857	36	36 5.9139	6	6.0164	36	36.0986
7	7 1 8.9953	7	7 1.1499	37	37 6.0782	7	7.0192	37	37.1013
8	8 1 18.8518	8	8 1.3142	38	38 6.2424	8	8.0219	38	38.1040
9	9 1 28.7083	9	9 1.4785	39	39 6.4067	9	9.0246	39	39.1068
10	10 1 38.5647	10	10 1.6428	40	40 6.5710	10	10.0274	40	40.1095
11	11 1 48.4212	11	11 1.8070	41	41 6.7353	11	11.0301	41	41.1123
12	12 1 58.2777	12	12 1.9713	42	42 6.8995	12	12.0329	42	42.1150
13	13 2 8.1342	13	13 2.1356	43	43 7.0638	13	13.0356	43	43.1177
14	14 2 17.9906	14	14 2.2998	44	44 7.2281	14	14.0383	44	44.1205
15	15 2 27.8471	15	15 2.4641	45	45 7.3924	15	15.0411	45	45.1232
16	16 2 37.7036	16	16 2.6284	46	46 7.5566	16	16.0438	46	46.1259
17	17 2 47.5600	17	17 2.7927	47	47 7.7209	17	17.0465	47	47.1287
18	18 2 57.4165	18	18 2.9569	48	48 7.8852	18	18.0493	48	48.1314
19	19 3 7.2730	19	19 3.1212	49	49 8.0495	19	19.0520	49	49.1342
20	20 3 17.1295	20	20 3.2855	50	50 8.2137	20	20.0548	50	50.1369
21	21 3 26.9859	21	21 3.4498	51	51 8.3780	21	21.0575	51	51.1396
22	22 3 36.8424	22	22 3.6140	52	52 8.5423	22	22.0602	52	52.1424
23	23 3 46.6989	23	23 3.7783	53	53 8.7066	23	23.0630	53	53.1451
24	24 3 56.5554	24	24 3.9426	54	54 8.8708	24	24.0657	54	54.1479
		25	25 4.1069	55	55 9.0351	25	25.0685	55	55.1506
		26	26 4.2711	56	56 9.1994	26	26.0712	56	56.1533
		27	27 4.4354	57	57 9.3637	27	27.0739	57	57.1561
		28	28 4.5997	58	58 9.5279	28	28.0767	58	58.1588
		29	29 4.7640	59	59 9.6922	29	29.0794	59	59.1615
		30	30 4.9282	60	60 9.8565	30	30.0821	60	60.1643

TABLE
For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS
of SIDEREAL Time.

FRACTIONS OF A SECOND.

Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.
000 01	0°01003	0°34	0°34093	0°67	0°67183
000 02	0°02006	0°35	0°35096	0°68	0°68186
000 03	0°03008	0°36	0°36099	0°69	0°69189
000 04	0°04011	0°37	0°37101	0°70	0°70192
000 05	0°05014	0°38	0°38104	0°71	0°71194
000 06	0°06016	0°39	0°39107	0°72	0°72197
000 07	0°07019	0°40	0°40110	0°73	0°73200
000 08	0°08022	0°41	0°41112	0°74	0°74203
000 09	0°09025	0°42	0°42115	0°75	0°75205
000 10	0°10027	0°43	0°43118	0°76	0°76208
000 11	0°11030	0°44	0°44120	0°77	0°77211
000 12	0°12033	0°45	0°45123	0°78	0°78214
000 13	0°13036	0°46	0°46126	0°79	0°79216
000 14	0°14038	0°47	0°47129	0°80	0°80219
000 15	0°15041	0°48	0°48131	0°81	0°81222
000 16	0°16044	0°49	0°49134	0°82	0°82225
000 17	0°17047	0°50	0°50137	0°83	0°83227
000 18	0°18049	0°51	0°51140	0°84	0°84230
000 19	0°19052	0°52	0°52142	0°85	0°85233
000 20	0°20055	0°53	0°53145	0°86	0°86235
000 21	0°21057	0°54	0°54148	0°87	0°87238
000 22	0°22060	0°55	0°55151	0°88	0°88241
000 23	0°23063	0°56	0°56153	0°89	0°89244
000 24	0°24066	0°57	0°57156	0°90	0°90246
000 25	0°25068	0°58	0°58159	0°91	0°91249
000 26	0°26071	0°59	0°59162	0°92	0°92252
000 27	0°27074	0°60	0°60164	0°93	0°93255
000 28	0°28077	0°61	0°61167	0°94	0°94257
000 29	0°29079	0°62	0°62170	0°95	0°95260
000 30	0°30082	0°63	0°63173	0°96	0°96263
000 31	0°31085	0°64	0°64175	0°97	0°97266
000 32	0°32088	0°65	0°65178	0°98	0°98268
000 33	0°33090	0°66	0°66181	0°99	0°99271

This TABLE is useful for the conversion of MEAN SOLAR Time into SIDEREAL Time.
Sidereal Time required = Sidereal Time at the preceding Mean Noon + the Equivalent to the given Mean Time.
EXAMPLE.—To convert 2^h 22^m 25^s.62 Mean Time at Greenwich, Jan. 2, 1856, into Sidereal Time.

Sidereal Time at the preceding Mean Noon, viz. January 2 18 45 16.78
 For Mean Intervals. { 22 0 19.713
 { 25 31.614
 { 0.62 25.069
 { 0.622 0.622
 The Sum is the Sidereal Time required 21 8 5.80

TABLES.

TABLE
For converting INTERVALS of SIDEREAL Time into Equivalent INTERVALS of
MEAN SOLAR Time.

HOURS.		MINUTES.				SECONDS.			
Hours of Sidereal Time.	Equivalents in Mean Time.	Minutes of Sidereal Time.	Equivalents in Mean Time.	Minutes of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.
1	h m s 0 59 50.1704	1	m s 0 59.8362	31	m s 30 54.9214	1	s 0.9973	31	s 30.9154
2	1 59 40.3409	2	1 59.6723	32	31 54.7576	2	1.9945	32	31.8308
3	2 59 30.5113	3	2 59.5085	33	32 54.5937	3	2.9918	33	32.7462
4	3 59 20.6818	4	3 59.3447	34	33 54.4299	4	3.9891	34	33.6616
5	4 59 10.8522	5	4 59.1809	35	34 54.2661	5	4.9864	35	34.5770
6	5 59 1.0226	6	5 59.0170	36	35 54.1023	6	5.9836	36	35.4924
7	6 58 51.1931	7	6 58.8532	37	36 53.9384	7	6.9809	37	36.4078
8	7 58 41.3635	8	7 58.6894	38	37 53.7746	8	7.9782	38	37.3232
9	8 58 31.5340	9	8 58.5256	39	38 53.6108	9	8.9754	39	38.2386
10	9 58 21.7044	10	9 58.3617	40	39 53.4470	10	9.9727	40	39.1540
11	10 58 11.8748	11	10 58.1979	41	40 53.2831	11	10.9700	41	40.0694
12	11 58 2.0453	12	11 58.0341	42	41 53.1193	12	11.9672	42	40.9848
13	12 57 52.2157	13	12 57.8703	43	42 52.9555	13	12.9645	43	41.9002
14	13 57 42.3862	14	13 57.7064	44	43 52.7917	14	13.9618	44	42.8156
15	14 57 32.5566	15	14 57.5426	45	44 52.6278	15	14.9591	45	43.7310
16	15 57 22.7270	16	15 57.3788	46	45 52.4640	16	15.9563	46	44.6464
17	16 57 12.8975	17	16 57.2150	47	46 52.3002	17	16.9536	47	45.5618
18	17 57 3.0679	18	17 57.0511	48	47 52.1364	18	17.9509	48	46.4772
19	18 56 53.2384	19	18 56.8873	49	48 51.9725	19	18.9481	49	47.3926
20	19 56 43.4088	20	19 56.7235	50	49 51.8087	20	19.9454	50	48.3080
21	20 56 33.5792	21	20 56.5597	51	50 51.6449	21	20.9427	51	49.2234
22	21 56 23.7497	22	21 56.3958	52	51 51.4810	22	21.9399	52	50.1388
23	22 56 13.9201	23	22 56.2320	53	52 51.3172	23	22.9372	53	51.0542
24	23 56 4.0906	24	23 56.0682	54	53 51.1534	24	23.9345	54	51.9696
		25	24 55.9044	55	54 50.9896	25	24.9318	55	52.8850
		26	25 55.7405	56	55 50.8257	26	25.9290	56	53.8004
		27	26 55.5767	57	56 50.6619	27	26.9263	57	54.7158
		28	27 55.4129	58	57 50.4981	28	27.9236	58	55.6312
		29	28 55.2490	59	58 50.3343	29	28.9208	59	56.5466
		30	29 55.0852	60	59 50.1704	30	29.9181	60	57.4620

TABLE
for converting INTERVALS of SIDEREAL Time into Equivalent INTERVALS of
MEAN SOLAR Time.

FRACTIONS OF A SECOND.

Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.
0.00997	0.34	0.33907	0.67	0.66817
0.01995	0.35	0.34904	0.68	0.67814
0.02992	0.36	0.35902	0.69	0.68812
0.03989	0.37	0.36899	0.70	0.69809
0.04986	0.38	0.37896	0.71	0.70806
0.05984	0.39	0.38894	0.72	0.71803
0.06981	0.40	0.39891	0.73	0.72801
0.07978	0.41	0.40888	0.74	0.73798
0.08975	0.42	0.41885	0.75	0.74795
0.09973	0.43	0.42883	0.76	0.75793
0.10970	0.44	0.43880	0.77	0.76790
0.11967	0.45	0.44877	0.78	0.77787
0.12965	0.46	0.45874	0.79	0.78784
0.13962	0.47	0.46872	0.80	0.79782
0.14959	0.48	0.47869	0.81	0.80779
0.15956	0.49	0.48866	0.82	0.81776
0.16954	0.50	0.49864	0.83	0.82773
0.17951	0.51	0.50861	0.84	0.83771
0.18948	0.52	0.51858	0.85	0.84768
0.19945	0.53	0.52855	0.86	0.85765
0.20943	0.54	0.53853	0.87	0.86762
0.21940	0.55	0.54850	0.88	0.87760
0.22937	0.56	0.55847	0.89	0.88757
0.23934	0.57	0.56844	0.90	0.89754
0.24932	0.58	0.57842	0.91	0.90752
0.25929	0.59	0.58839	0.92	0.91749
0.26926	0.60	0.59836	0.93	0.92746
0.2		0.60833	0.94	0.93743
0.1		.61831	0.95	0.94741
0		.62828	0.96	0.95738
			0.97	0.96735
			0.98	0.97732
				0.9730

This TABLE is useful for the conversion of SIDEREAL into MEAN SOLAR Time.
Mean Solar Time required = Mean Time at the preceding Sidereal Noon + the Equivalent to the given Sidereal Time.

EXAMPLE.—To convert 21^h 8^m 5^s.80 Sidereal Time at Greenwich, Jan. 2, 1856, into Mean Time.

Mean Time at the preceding Sidereal Noon, viz. ----- January 1 5 17 47.57
 For Sidereal Intervals. { 21^h 8^m 5^s.80 } The Table gives the Equivalent
 Mean Intervals, { 8 0 } 7 58.689
 { 5 0.80 } 4.986
 { } .798

The Sum is the Mean Time required, Jan. 2 2 22 35.62

TABLE, SHOWING THE CORRECTION REQUIRED ON ACCOUNT OF SECOND DIFFERENCES,

In finding the Greenwich Time corresponding to a reduced Lunar Distance

Arguments:—Approximate Interval and Difference of Proportional Logarithms

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris																								
h	m	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	10	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	3	3	3	3
0	20	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	4	5	5	5	5	6	6
0	30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	8
0	40	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	10
0	50	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	12
1	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	13
1	10	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	14
1	20	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15
1	30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris																							
h	m	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	10	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6
0	20	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	12
0	30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	15	15	16	16	16	17	17	17	17
0	40	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	20	20	21	21	21	21
0	50	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	24
1	0	15	16	16	17	17	18	18	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	27	27
1	10	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	29
1	20	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	30
1	30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris																
h	m	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	10	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	9	9
0	20	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	16
0	30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	23
0	40	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29
0	50	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	33
1	0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	37
1	10	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	39	39
1	20	32	33	33	34	34	35	35	36	37	38	38	39	39	40	40	41	41
1	30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42

The Correction is to be added to the approximate Greenwich Time when the Logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

The Longitudes are reckoned from the Meridian of Greenwich.
North Latitudes and *West* Longitudes are indicated by the sign +,
South Latitudes and *East* Longitudes by the sign —.

ABERDEEN - - - -	(Marischal College.) Lat. +57° 8' 57"·8 Long. + 0 ^h 8 ^m 22 ^s ·78	} <i>Ast. Nach.</i> vol. x. page 211.
ABO - - - - -	Lat. +60° 26' 57" Long. — 1 ^h 29 ^m 8 ^s ·8	} <i>Argelander's Observations</i> , vol. i. page 21, and vol. ii. pages 25, 27. <i>Ast. Nach.</i> vol. ix. page 264.
ALTONA - - - - -	Lat. +53° 32' 45"·3 Long. — 0 ^h 39 ^m 46 ^s ·6	} <i>Gauss on the Latitudes of Göttingen and Altona</i> , page 71. (Göttingen, 1828.) <i>Ast. Nach.</i> vol. viii. page 132.
ARMAGH - - - - -	Lat. +54° 21' 12"·7 Long. + 0 ^h 26 ^m 35 ^s ·5	} Communicated by the Rev. Dr. Robinson.
ASHURST - - - - -	(R. Snow, Esq.) Lat. +51° 15' 58" Long. + 0 ^h 1 ^m 10 ^s ·1	} <i>Monthly Notices of the Royal Ast. Soc.</i> vol. v. page 232.
BERLIN - - - - -	Lat. +52° 31' 13"·5 Long. — 0 ^h 53 ^m 35 ^s ·5	} <i>Berliner Astron. Jahrbuch</i> for 1833, page 249.
— (New Observ ⁿ .)	Lat. +52° 30' 16"·7 Long. — 0 ^h 53 ^m 35 ^s ·5	} <i>Berliner Astron. Jahrbuch</i> for 1852, page 289.
BIRR CASTLE - - - -	(The Earl of Rosse.) Lat. +53° 5' 47" Long. + 0 ^h 31 ^m 40 ^s ·9	} Communicated by the Earl of Rosse.
BONN - - - - -	Lat. +50° 44' 9"·1 Long. — 0 ^h 28 ^m 27 ^s ·0	} <i>Ast. Nach.</i> vol. xviii. page 135.
	Lat. +53° 4' 36"·0 Long. — 0 ^h 35 ^m 15 ^s ·9	} <i>Ast. Nach.</i> vol. i. page 240. This is the mean of the results given in <i>Ast. Nach.</i> vol. i. page 240; vol. iv. page 392; vol. v. page 247; vol. viii. pages 131 and 284.
	Lat. +56° 56"·0 Long. — 0 ^h 35 ^m 15 ^s ·9	} <i>Berliner Astron. Jahrbuch</i> , 1852, p. 289.

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

BRUSSELS - - - -	Lat. $+50^{\circ} 51' 10'' \cdot 7$ Long. $- 0^h 17^m 29^s \cdot 0$	} <i>Annuaire de l'Observatoire de Bruxelles, pour l'An 1837.</i> pages 264 and 265.
BUDA - - - - -	(Ofen.) Lat. $+47^{\circ} 29' 12'' \cdot 2$ Long. $- 1^h 16^m 12^s \cdot 7$	} <i>Zeitschrift für Astronomie</i> , vol. iii. page 70; and <i>Mem. Ast. Soc.</i> vol. i. page 280. <i>Zach's Correspond. Astron.</i> vol. vii. page 263; and <i>Zeitschrift für Astronomie</i> , vol. ii. page 507.
CAMBRIDGE - - - -	Lat. $+52^{\circ} 12' 51'' \cdot 8$ Long. $- 0^h 0^m 23^s \cdot 54$	} <i>Camb. Phil. Trans.</i> vol. v. p. 279. <i>Camb. Phil. Trans.</i> vol. iii. p. 168.
CAMBRIDGE, U. S. - -	Lat. $+42^{\circ} 22' 49''$ Long. $+ 4^h 44^m 32^s$	} <i>Monthly Notices of the Royal Ast. Soc.</i> vol. vii. page 157.
CAPE OF GOOD HOPE -	Lat. $-33^{\circ} 56' 3''$ Long. $- 1^h 13^m 55^s \cdot 0$	} <i>Mem. Roy. Ast. Soc.</i> vol. vi. page 130. Communicated by Mr. Henderson.
CHRISTIANIA - - - -	(New Observatory.) Lat. $+59^{\circ} 54' 42'' \cdot 4$ Long. $- 0^h 42^m 53^s \cdot 9$	} <i>Ast. Nach.</i> vol. xii. page 283. <i>Berliner Astron. Jahrbuch</i> , 1852, page 289.
COPENHAGEN - - - -	(University.) Lat. $+55^{\circ} 40' 53'' \cdot 0$ Long. $- 0^h 50^m 19^s \cdot 8$	} <i>Ast. Nach.</i> vol. v. page 366. <i>Ast. Nach.</i> vol. xix. page 120.
CRACOW - - - - -	Lat. $+50^{\circ} 3' 50'' \cdot 0$ Long. $- 1^h 19^m 51^s \cdot 1$	} <i>Ast. Nach.</i> vol. xvi. page 256. <i>Ast. Nach.</i> vol. xvi. page 352; and vol. xviii. page 392.
DANTZIC - - - - -	Lat. $+54^{\circ} 21' 18'' \cdot 0$ Long. $- 1^h 14^m 45^s \cdot 0$	} <i>Berliner Astron. Jahrbuch</i> , 1852, p. 289.
DORPAT - - - - -	Lat. $+58^{\circ} 22' 47'' \cdot 1$ Long. $- 1^h 46^m 55^s \cdot 0$	} <i>Struve's Astronom. Observations</i> , vol. vi. page 60. <i>Bessel's Tabulæ Regiomontanae</i> , page 2.
DUBLIN - - - - -	Lat. $+53^{\circ} 23' 13''$ Long. $+ 0^h 25^m 22^s$	} <i>Ast. Nach.</i> vol. x. page 274.
DURHAM - - - - -	Lat. $+54^{\circ} 46' 6'' \cdot 2$ Long. $+ 0^h 6^m 18^s$	} Communicated Chevallier.
EDINBURGH - - - -	Lat. $+55^{\circ} 57' 23'' \cdot 2$ Long. $+ 0^h 12^m 43^s \cdot 6$	} <i>Ast. Soc. Not.</i> vol. <i>Mem. Ast. Soc.</i> vol.

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

FLORENCE - - - -	(St. Giovanni.) Lat. + 43° 46' 41".4 Long. - 0 ^h 45 ^m 3 ^s .6	} <i>Zach's Correspondance Astronomique</i> , vol. i. pages 1 to 14.
GENEVA - - - -	Lat. + 46° 11' 59".4 Long. - 0 ^h 24 ^m 37 ^s .7	<i>Mémoire sur une nouvelle détermination sur la Latitude de Genève</i> . By M. Gautier. (Genève, 1830.) <i>Ast. Nach.</i> vol. xx. page 7.
GOTHA - - - -	(Seeberg.) Lat. + 50° 56' 5" Long. - 0 ^h 42 ^m 56 ^s .4	<i>Gauss on the Latitudes of Göttingen and Altona</i> , page 80. <i>Bessel's Tab. Reg.</i> page 2.
GÖTTINGEN - - - -	Lat. + 51° 31' 48" Long. - 0 ^h 39 ^m 46 ^s .5	<i>Gauss on the Latitudes of Göttingen and Altona</i> , page 71. <i>Bessel's Tab. Reg.</i> page 2.
GREENWICH - - - -	Lat. + 51° 28' 38".2 Long. 0 ^h 0 ^m 0 ^s	<i>Greenwich Observations</i> , 1843, page lvii.
HAMBURGH - - - -	Lat. + 53° 33' 5".0 Long. - 0 ^h 39 ^m 54 ^s .1	<i>Ast. Nach.</i> vol. vii. page 379. <i>Berliner Astron. Jahrbuch</i> , 1852, page 289.
HARTWELL - - - -	(Dr. Lee.) Lat. + 51° 48' 36" Long. + 0 ^h 3 ^m 24 ^s .33	} Communicated by Dr. Lee.
KENSINGTON - - - -	(Sir James South.) Lat. + 51° 30' 12".7 Long. + 0 ^h 0 ^m 46 ^s .78	} <i>Mem. Ast. Soc.</i> vol. v. page 370.
KÖNIGSBERG - - - -	Lat. + 54° 42' 50" Long. - 1 ^h 22 ^m 0 ^s .5	<i>Introduction to Bessel's Astron. Observations for 1821</i> . <i>Bessel's Tab. Reg.</i> page 2.
KREMSMUNSTER - - - -	Lat. + 48° 3' 24" Long. - 0 ^h 56 ^m 32 ^s .3	<i>Ast. Nach.</i> vol. xi. page 367. <i>Ast. Nach.</i> vol. iii. page 121.
LEIPZIG - - - -	Lat. + 51° 20' 20".1 Long. - 0 ^h 49 ^m 28 ^s .5	} <i>Berliner Astron. Jahrbuch</i> , 1852, page 289.
LEIPZIG - - - -	Lat. + 52° 9' 28".2 Long. - 0 ^h 17 ^m 57 ^s .5	} <i>Ast. Nach.</i> vol. xvii. page 100.
LEIPZIG - - - -	Lat. + 51° 58' 18".8	} Communicated by J. Hartnup, Esq. G. B. Airy, Esq.

LATITUDES AND LONGITUDES OF THE PRINCIPAL
OBSERVATORIES.

MADRAS - - - - -	Lat. $+ 13^{\circ} 4' 9'' \cdot 2$ Long. $- 5^{\text{h}} 21^{\text{m}} 3^{\text{s}} \cdot 77$	} <i>Taylor's Result of Ast. Obs. at the Observatory</i> , vol. i. 1831, pages 94 & 95. (Madras, 1832.)
MAKERSTOUN - - - (Sir T. M. Brisbane.)	Lat. $+ 55^{\circ} 34' 45''$ Long. $+ 0^{\text{h}} 10^{\text{m}} 4^{\text{s}} \cdot 0$	
MANHEIM - - - - -	Lat. $+ 49^{\circ} 29' 14''$ Long. $- 0^{\text{h}} 33^{\text{m}} 51^{\text{s}} \cdot 4$	} <i>Zach's Correspondance Astronomique</i> , vol. i. page 193. <i>Ast. Nach.</i> vol. ii. page 398.
MARKREE - - - - - (E. J. Cooper, Esq.)	Lat. $+ 54^{\circ} 10' 36''$ Long. $+ 0^{\text{h}} 33^{\text{m}} 48^{\text{s}} \cdot 4$	
MARSEILLES - - - - -	Lat. $+ 43^{\circ} 17' 50'' \cdot 1$ Long. $- 0^{\text{h}} 21^{\text{m}} 29^{\text{s}} \cdot 0$	} <i>Zach's Attraction des Montagnes</i> , vol. ii. page 591. <i>Ast. Nach.</i> vol. iv. page 36.
MILAN - - - - - (Brera.)	Lat. $+ 45^{\circ} 28' 1''$ Long. $- 0^{\text{h}} 36^{\text{m}} 47^{\text{s}} \cdot 2$	
MODENA - - - - -	Lat. $+ 44^{\circ} 38' 53''$ Long. $- 0^{\text{h}} 43^{\text{m}} 43^{\text{s}} \cdot 2$	} <i>Effem. Astron. di Milano</i> for 1829, pages 94 and 60.
MOSCOW - - - - -	Lat. $+ 55^{\circ} 45' 19'' \cdot 8$ Long. $- 2^{\text{h}} 30^{\text{m}} 17^{\text{s}} \cdot 0$	
MUNICH - - - - - (Bogenhausen.)	Lat. $+ 48^{\circ} 8' 45''$ Long. $- 0^{\text{h}} 46^{\text{m}} 26^{\text{s}} \cdot 5$	} <i>Ast. Nach.</i> vol. i. page 221. <i>Ast. Nach.</i> vol. viii. page 148.
NAPLES - - - - - (Capo di Monte.)	Lat. $+ 40^{\circ} 51' 46'' \cdot 6$ Long. $- 0^{\text{h}} 57^{\text{m}} 0^{\text{s}} \cdot 3$	
NICOLÆFF - - - - -	Lat. $+ 46^{\circ} 58' 20'' \cdot 6$ Long. $- 2^{\text{h}} 7^{\text{m}} 55^{\text{s}} \cdot 1$	} <i>Ast. Nach.</i> vol. vii. page 261. <i>Ast. Nach.</i> vol. vii. page 306.
OXFORD - - - - -	Lat. $+ 51^{\circ} 45' 36'' \cdot 0$ Long. $+ 0^{\text{h}} 5^{\text{m}} 2^{\text{s}} \cdot 6$	
PADUA - - - - -	Lat. $+ 45^{\circ} 24' 2''$ Long. $- 0^{\text{h}} 47^{\text{m}} 29^{\text{s}} \cdot 2$	}

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PALERMO - - - -	Lat. + 38° 6' 44"	<i>Cacciatore</i> , in Books 7 and 8 of <i>Palermo Observations</i> .
	Long. - 0 ^h 53 ^m 25 ^s .6	Communicated by M. Cacciatore to Captain B. Hall, R.N.
PARAMATTA - - -	Lat. - 33° 48' 49".8	} <i>Phil. Trans.</i> for 1829. Part iii. pages 16 and 29.
	Long. - 10 ^h 4 ^m 6 ^s .25	
PARIS - - - - -	Lat. + 48° 50' 13"	<i>Conn. des Temps</i> for 1835, page 356.
	Long. - 0 ^h 9 ^m 21 ^s .5	<i>Phil. Trans.</i> for 1827. (<i>Henderson on the Longitudes of Greenwich and Paris.</i>)
PETERSBURGH - - -	Lat. + 59° 56' 31"	<i>Conn. des Temps</i> for 1836, page 340.
	Long. - 2 ^h 1 ^m 15 ^s .8	<i>Ast. Nach.</i> vol. viii. page 360.
PORTSMOUTH - - -	Lat. + 50° 48' 3"	} <i>Requisite Tables</i> , 3rd edit. (from Trig. Survey.)
	Long. + 0 ^h 4 ^m 23 ^s .9	
PRAGUE - - - - -	Lat. + 50° 5' 18".5	<i>Ast. Nach.</i> vol. viii. page 198.
	Long. - 0 ^h 57 ^m 41 ^s .9	<i>Ast. Nach.</i> vol. iii. page 264.
PULKOWA - - - -	Lat. + 59° 46' 18".6	} <i>Berliner Astronomisches Jahrbuch</i> , für 1848.
	Long. - 2 ^h 1 ^m 18 ^s .5	
REGENT'S PARK - -	(George Bishop, Esq.)	} Communicated by George Bishop, Esq.
	Lat. + 51° 31' 29".9	
	Long. + 0 ^h 0 ^m 37 ^s .1	
ROME - - - - -	(Roman College.)	<i>Conn. des Temps</i> for 1822, page 312.
	Lat. + 41° 53' 52"	
	Long. - 0 ^h 49 ^m 54 ^s .7	<i>Ast. Nach.</i> vol. viii. page 88.
SENFTEMBERG - - -	Lat. + 50° 5' 10"	} <i>Ast. Nach.</i> vol. xxxi. page 173.
	Long. - 1 ^h 5 ^m 50 ^s .5	
ST. FERNANDO, near	Lat. + 36° 27' 45"	} <i>Zach's Correspondance Astronomique</i> , vol. xiv. pages 240 to 243.
CADIZ - - - - -	or 42"	
	Long. + 0 ^h 24 ^m 49 ^s .1	
ST. HELENA - - -	Lat. - 15° 55' 26"	} Communicated by M. J. Johnson, Esq.
	Long. + 0 ^h 22 ^m 50 ^s	
SPEYER - - - - -	Lat. + 49° 18' 55".2	<i>Schwerd's Observations</i> . Part i. page xx.
	Long. - 0 ^h 33 ^m 46 ^s .5	<i>Ast. Nach.</i> vol. iii. page 46.
D - - - - -	(W. Lassell, Esq.)	} Communicated by W. Lassell, Esq.
	Lat. + 53° 25' 3".5	
	Long. + 0 ^h 11 ^m 47 ^s .34	

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

STOCKHOLM - - - -	Lat. + 59° 20' 31".0 Long. - 1 ^h 12 ^m 14 ^s .8	<i>Conn. des Temps</i> , 1840, page 344. <i>Ast. Nach.</i> vol. xi. page 408.
STRASBURGH - - - -	Lat. + 48° 34' 40" Long. - 0 ^h 31 ^m 0 ^s .8	} <i>Comptes Rendus Hebdomadaires des Séances de L'Académie des Sciences.</i> 2nd Semestre. 1836, page 520.
TURIN - - - - -	(New Observatory.) Lat. + 45° 4' 6" Long. - 0 ^h 30 ^m 48 ^s .4	
UPSALA - - - - -	Lat. + 59° 51' 50".0 Long. - 1 ^h 10 ^m 34 ^s .8	<i>Conn. des Temps</i> , 1840, page 344. <i>Ast. Nach.</i> vol. xi. page 409.
VENICE - - - - -	Lat. + 45° 25' 49".5 Long. - 0 ^h 49 ^m 25 ^s .4	} <i>Berliner Astron. Jahrbuch</i> , 1852, page 290.
VERONA - - - - -	(Lyceum.) Lat. + 45° 26' Long. - 0 ^h 44 ^m 0 ^s .1	
VIENNA - - - - -	Lat. + 48° 12' 35" Long. - 1 ^h 5 ^m 31 ^s .9	<i>Littrow's Astron. Observations</i> , Part viii. page 124. <i>Ast. Nach.</i> vol. iii. page 64.
VIVIERS - - - - -	Lat. + 44° 29' 11" Long. - 0 ^h 18 ^m 44 ^s .8	<i>Zach's Correspondance Astronomique</i> , vol. ii. page 138. <i>Ast. Nach.</i> vol. v. page 252.
WARSAW - - - - -	Lat. + 52° 13' 5".0 Long. - 1 ^h 24 ^m 8 ^s .5	} <i>Additions to Conn. des Temps</i> , 1846, pages 30, 31.
WASHINGTON - - - -	Lat. + 38° 53' 32".8 Long. + 5 ^h 8 ^m 0 ^s .0	
WASHINGTON - - - -	(National Observatory.) Lat. + 38° 53' 38".6 Long. + 5 ^h 8 ^m 12 ^s .0	} <i>Roy. Ast. Soc. Monthly Notices</i> , vol. x. page 180.
WATERINGBURY - - -	(Rev. W. R. Dawes.) Lat. + 51° 15' 12" Long. - 0 ^h 0 ^m 0 ^s .8	
WILNA - - - - -	Lat. + Long.	<i>Ast. Nach.</i> vol. iv. page 562. <i>Ast. Nach.</i> vol. viii. page 96.
WROTTESEY HALL - -	())	by Lord

EXPLANATION OF THE ARTICLES

CONTAINED IN

THE NAUTICAL ALMANAC AND ASTRONOMICAL EPHEMERIS

FOR THE YEAR 1856.

ALL the articles of the Ephemeris have been computed for Greenwich MEAN solar time ; and where they are given for apparent solar or sidereal time, it has been chiefly for the convenience of astronomers. A *day* is the interval of time between the departure of any meridian from a heavenly body and its succeeding return to it, and derives its name from the body with which the motion of the meridian is compared. The interval between the departure and return of a meridian to the Sun is called a *solar day* ; in the case of the Moon, the interval is called a *lunar day* ; and in that of a Star, a *sidereal day*. The revolution of the Earth on its axis is always performed in the same time ; and if the heavenly bodies preserved the same positions with respect to each other, the intervals between the departure and return of a meridian to each would be the same, and all days, consequently, of equal length. The Sun, (or more strictly, the Earth in its orbit,) the Moon, and the Planets are, however, in continual motion ; and with velocities not only different from each other, but varying in each particular body : the length of a day, as determined by any of these bodies, is therefore a variable quantity.

Astronomers, with a view of obtaining a convenient and uniform measure of time, have recourse to a *mean solar day*, the length of which is equal to the mean or average of all the apparent solar days in a year. An imaginary Sun, called the *mean Sun*, is conceived to move uniformly in the Equator with the real Sun's *mean* motion in Right Ascension, and the interval between the departure of any meridian from the *mean Sun* and its succeeding return to it is the duration of the mean solar day. Clocks and chronometers are adjusted to mean solar time ; so that a complete revolution (through 24 hours) of the hour hand of one of these machines should be performed in exactly the same interval as the revolution of the Earth on its axis with respect to the mean Sun. If the mean Sun could be observed on the meridian at the instant that the clock or chronometer indicated $0^h 0^m 0^s$, it would again be observed there when the hour hand returned to the same position. As the time deduced from observation of the *true Sun* is called *true* or *apparent time*, so the time deduced from the *mean Sun*, or indicated by the machines which represent its motion, is denominated *mean time*.

We cannot *immediately* obtain mean time from observation ; but, from an observation of the true Sun, with the aid of the equation of time, which is the angular distance in time between the mean and the true Sun, we may readily deduce it. Suppose the true Sun to be observed on the meridian of Greenwich, Jan. 1, 1856 ; would then be apparent noon at that meridian ; the equation of time at this instant $16^m 04$, and, by the precept at the head of the column, it is "to be added to

apparent time"; hence it appears that the corresponding mean time is $0^h 3^m 36^{\cdot}04$, or that the mean Sun had passed the meridian previously to the true Sun, and that at the instant of observation the mean time clock or chronometer ought to indicate this time.

A mere inspection of the columns of the Ephemeris is, of itself, sufficient to show that the quantities are continually varying, and that some reduction is necessary where data are to be obtained for any time differing from that for which the quantities are registered. Take, for instance, the Sun's Right Ascension on Page II. of the month of January; on January 1, it is $18^h 44^m 56^{\cdot}19$; on January 2, it is $18^h 49^m 21^{\cdot}18$; in the course of 24 mean hours it has therefore increased by $4^m 24^{\cdot}99$. If, then, the Right Ascension were required for any time between the Mean Noons of January 1 and 2, as at 6^h from Mean Noon of January 1, it would be necessary to increase the Right Ascension on January 1, by the proportional part of the daily increase due for the 6^h , viz. by one-fourth part, or $1^m 6^{\cdot}25$. This would in all cases be required, even under the meridian of Greenwich, for which the quantities have been specially computed. Let a person be now supposed to be under a meridian 15° West of Greenwich. The positions of the heavenly bodies, as referred to the centre of the Earth, are independent of meridians, and are the same for all places at the same absolute instant; but the relative times at Greenwich and the assumed meridian would be different. If it were 1^h from mean noon at the one place, it could not be 1^h from mean noon at the other; for when we speak of time, we mean, as regards a visible phenomenon, the distance of the Sun *westward* from a given meridian, and at the same absolute moment of time the Sun *cannot* be at the same distance (*reckoning westward*) from two meridians which are 15° distant from each other. Before we can make use of the Ephemeris, it is therefore necessary to ascertain, in every instance, the distance of the Sun (*in time*) from the meridian of Greenwich, or what is commonly called the corresponding Greenwich time; and this is evidently equal to the given time under the assumed meridian, *increased or diminished* by the difference (*in time*) of the two meridians, according as the assumed meridian is to the *Westward* or *Eastward* of Greenwich. In a mean Solar day or 24 mean Solar hours, the Earth, by its rotation from West to East, has caused every meridian in succession from East to West to pass the mean Sun; and since the motion is uniform, all the meridians distant from each other 15° will have passed the mean Sun, at intervals of one mean hour; the meridian to the Eastward passing first, or being, as compared with the Sun, always one mean hour in advance of the Westerly meridian. When it is 6^h from mean noon at a place 15° West of Greenwich, it is therefore 7^h from mean noon at Greenwich; and it is for this Greenwich time that we must deduce the quantities required from the Ephemeris.

If a chronometer adjusted to Greenwich mean time be at hand, the Greenwich time may be immediately obtained by applying a correction, deduced from the daily rate and interval elapsed, and this will be preferable in all cases for obtaining the requisite data from the Ephemeris.

The day adopted in this Ephemeris is supposed to begin at mean noon, or at the instant when a clock or chronometer shows $0^h 0^m 0^s$, Greenwich mean time, and is continued through the 24 hours, to the following mean noon, when another day begins. It may therefore be called the *Mean Astronomical Day*, although, in practice astronomers begin the day at the moment the true Sun's centre is on their meridian.

In the civil, or common, method of reckoning, the day is supposed to end at *the preceding* midnight, and to be counted only to 12 hours or noon, when the day *are reckoned over again* to the next midnight. The civil reckoning is therefore...

12^h in advance of the astronomical reckoning: and the civil time corresponding to any given astronomical time is hence readily found by *adding* 12^h to the latter: thus, if to Jan. 1^d 7^h 49^m, astronomical time, be added 12^h, the sum will be Jan. 1^d 19^h 49^m, or Jan. 1^d 7^h 49^m P.M. civil time. Again, to Jan. 1^d 15^h 35^m, astronomical time, add 12^h; the sum will be Jan. 2^d 3^h 35^m A.M. civil time. It thus appears that, from noon to midnight, the day of the month and the hour of the day are the same in both methods; but from midnight to noon they differ; for at midnight, when a new civil day commences, the astronomical day wants 12^h of its completion.

The conversion of civil into astronomical time, is, on the contrary, performed by *diminishing* the former by 12^h. Thus, January 2^d 3^h 35^m A.M. civil time, diminished by 12^h, leaves January 1^d 15^h 35^m for the corresponding astronomical time.

To each month there are devoted twenty pages, distinguished by the Roman numerals I. to XX.

For convenience of interpolation, the quantities that follow next in order of succession have been added at the bottom of each page. Thus the quantities opposite to February 1 will be found inserted also opposite to January 32, the number of the days in each month having been intentionally increased for such purpose.

Page I. of each Month.

The contents of this page are adapted to *Apparent Noon*, or the instant when the Sun's centre is on the meridian of Greenwich. The *Sun's Right Ascension*, here given, is *affected with Aberration*, and reckoned from the true Equinox; it is therefore the Sidereal Time at Apparent Noon, or the time which ought to be shown by a Sidereal Clock, at that instant. The *Sun's Apparent Declination* is the angular distance of the Sun from the Equator, measured on the meridian.

The columns entitled "Diff. for 1 hour" are intended to facilitate the reduction of the quantities from Apparent Noon to any other time. The values of these quantities for any proposed *Mean* time will, however, be more accurately ascertained by means of the numbers on page II. from which, indeed, they have been derived.

The *Sidereal Time of the Sun's Semidiameter passing the Meridian* is useful for reducing a transit observation of either limb of the Sun, when one only has been observed, to the transit of the centre.

The *Equation of Time* is the difference between Apparent and Mean Time, and therefore serves for the conversion of either time into the other. The numbers here given, show, for Greenwich Apparent Noon, the distance of the mean Sun from the meridian, or the portion of time to be *added to* or *subtracted from*, (according to the precept at the head of the column,) Greenwich Apparent Noon to obtain the corresponding Mean Time at the same meridian, or the time which ought to be shown by the Mean Time Clock. It differs from the Equation of Time on page II., because the equation itself varies in the interval between Apparent and Mean Noon.

Where time is deduced from observations of the Sun, the *immediate* result is *apparent* time; to convert it into mean time, the equation of time is necessary, and it is ^{to be} applied to apparent time, according to the precept at the head of the col^l

Ja
rex
the

arent time deduced from an observation of the Sun on
ude 45° or 3^h East of Greenwich, to be 6^h, and it were
time: Subtracting the difference of longitude 3^h from
ave 3^h for the corresponding apparent time at

Greenwich. The difference of the equation for 1 hour is $0^s 850$, which, multiplied by 3, gives $2^s 550$ for the variation in 3 hours, and this being added (because the equation is increasing) to $9^m 54^s 19$, the equation of time at apparent noon, the result is $9^m 56^s 74$, to be added (according to the precept at the head of the column) to the given apparent time 6^h , whence we obtain $6^h 9^m 56^s 74$ for the mean time required.

At page I. of the month of April, we observe, at the head of the column $\frac{\text{added to}}{\text{subt. from}}$, which signifies that a change of precept occurs in the course of the month; and between the equations opposite to the 14th and 15th days of the month, a black line, indicating that the change occurs between the Apparent Noons of those days. The upper precept applies to all the quantities above the black line; and the lower precept to all the quantities below it: that is, in the instance referred to, the Equation of Time is to be *added to* Apparent Time from the 1st of April to the instant at which the equation becomes $0^m 0^s$, which happens between the noons of the 14th and 15th days of the month; but after that instant the equation is to be *subtracted* from Apparent to obtain Mean Time.

Page II. of each Month.

The *Sun's Apparent Right Ascension* and *Declination* at mean noon have been deduced from its *Apparent* longitude and latitude given at page III., and the *apparent* obliquity of the ecliptic at page 242. They denote the *apparent* position of the true Sun with reference to the equator, and the true equinox, at the instant the Greenwich mean time clock, or chronometer, indicates $0^h 0^m 0^s$, or when the hour angle of the true Sun is equal to the equation of time.

To find the Right Ascension and Declination for any other mean time and place, as at $9^h 20^m$ A.M. March 2, 1856, in longitude 98° , or $6^h 32^m$, West of Greenwich. The astronomical time, corresponding to $9^h 20^m$ A.M. March 2, is $21^h 20^m$ from the noon of March 1, or March 1^d $21^h 20^m$, agreeably to what has been said before. The longitude, being West of Greenwich, must be added to March 1^d $21^h 20^m$, and the result, March 2^d $3^h 52^m$, is the corresponding Greenwich mean time, for which the Right Ascension and Declination are to be found. The difference between the Right Ascensions on March 2, and March 3, is $3^m 43^s 74$, that is, in the 24 mean hours succeeding the Mean Noon of March 2, the Right Ascension has increased by this quantity; it will, therefore, have received a proportional part of the increase in $3^h 52^m$, and the amount is readily obtained by this proportion $24^h : 3^m 43^s 74 :: 3^h 52^m : 36^s 05$; which, being *added* to $22^h 54^m 8^s 16$, the Right Ascension at Mean Noon of March 2, gives $22^h 54^m 44^s 21$, for the Right Ascension at the time proposed.

In a similar manner the Declinations indicate a decrease of $23' 0'' 2$ in the 24 hours; therefore $24^h : 23' 0'' 2 :: 3^h 52^m : 3' 42'' 4$, the proportional part of the decrease for $3^h 52^m$, which, *subtracted* from S. $7^\circ 0' 47'' 3$ leaves S. $6^\circ 57' 4'' 9$ for the Declination required.

The *Semidiameter of the Sun*. The numbers in this column express the angle at the centre of the earth subtended by the Sun's Semidiameter, and are required for reducing observations of the limb to the altitude of the Sun's upper or lower limb

Equation of Time. The numbers at the instant of Mean Noon, and then into Apparent Time; for which purpose to the precept at the head of the column

12^h, be subtracted the equation 3^m 50^s·68; the difference 11^h 56^m 9^s·32 is the corresponding apparent time. To find the equation of time at 2^h A.M. mean time on April 15, 1856, in longitude 90°, or 6^h 0^m, West of Greenwich. Add the difference of longitude to the given time, because it is West, and the corresponding astronomical mean time at Greenwich is April 14^d 20^h 0^m. The variation in 24 hours is 14^s·97, that is, the *sum* of the equations belonging to the noons of the 14th and 15th, because the equation has decreased to 0 and then increased in the interval, therefore

$$24^h : 14^s \cdot 97 :: 20^h \ 0^m : 12^s \cdot 47,$$

which, being greater than 0^m 11^s·87, the equation on the 14th, which was decreasing, shows that in the 20^h 0^m the equation has passed through its state of decrease to zero, or 0, and is now increasing. The difference 0^s·60 is the equation of time at the time proposed, and is to be added to mean time, because it has passed the zero.

Sidereal Time at Mean Noon is the angular distance of the First point of Aries, or the true Vernal Equinox, from the meridian, at the instant of Mean Noon: it is therefore the Right Ascension of the Mean Sun, or the time which ought to be shown by a Sidereal Clock at Greenwich, when the Mean Time Clock indicates 0^h 0^m 0^s.

A Sidereal Clock represents the rotation of the Earth on its axis, as referred to the Stars, its hour-hand performing a complete revolution through the 24 hours in the interval between the departure of any meridian from a Star and its next return to it. At the moment that the Vernal Equinox, or a Star whose Right Ascension is 0^h 0^m 0^s, is on the meridian of Greenwich, the Sidereal Clock ought to show 0^h 0^m 0^s, and at the succeeding return of the Star, or the Equinox, to the same meridian, the Clock ought to indicate the same time.

The sidereal time here given is that in common use among astronomers, and expresses the actual hour-angle from the meridian, westward, of the true equinoctial point at the moment of observation. It is therefore affected by the equation of the equinoxes; and is not, strictly speaking, a *mean* or uniformly increasing quantity. It ought, therefore, to be termed *apparent sidereal time* in the same manner as apparent solar time reckons from the actual arrival of the sun's centre on the meridian; and in like manner, as mean solar time is reckoned from the arrival of an imaginary sun, moving uniformly with its mean velocity, so *mean sidereal time* (whose expression would be simply $\frac{\odot\text{'s mean longitude}}{15}$) would be reckoned from the transit of, not the *true*, but the *mean* equinoctial point. The smallness of the fluctuations to which a clock, regulated to *apparent* sidereal time compared with one regulated to *mean* sidereal time, is subject, being at the utmost only 2^s·3 in a period of nineteen years, has prevented the practical inconvenience of this from being felt: no clock being sufficiently perfect to go during so long a period without frequent re-adjusting; and as the corrections applied by astronomers to the observed right ascensions of all objects are adapted to this supposed irregularity in the rate of the clock, the mean right ascensions thence deduced come out correct. It has, therefore, not been thought necessary, in this instance, to depart from received usage, however theoretically objectionable such a mode of counting time may appear, since a change in this respect would involve the necessity of a corresponding change in all tables of nutation.

Sidereal time at Mean Noon is useful in all cases where mean solar time is to be derived from observations of the heavenly bodies. It serves to facilitate the conversion of apparent to mean solar time, and *vice versa*, by the help of the tables for that purpose called a Table of Acceleration of Sidereal on Mean

Solar Time, and the corresponding Table of Retardation of Mean on Sidereal Time, according to the following rule:—Convert the interval from the mean noon immediately preceding, from the denomination given, to that required; and if mean time be required, the result will at once be that which the clock should show; but if sidereal time be that sought, the result must be added to the sidereal time at the preceding mean noon.

Example.—To convert $21^{\text{h}} 9^{\text{m}} 24^{\text{s}} \cdot 04$ sidereal time, January 2, 1856, into mean solar time, for the meridian of Greenwich.

	h	m	s
Sidereal time given - - - - -	21	9	24 [·] 04
Sidereal time at mean noon, January 2 - - - - -	18	45	16 [·] 78
<hr/>			
Interval in sidereal time from mean noon - - - - -	2	24	7 [·] 26
Retardation of mean on sidereal time for the interval	—	23	61
<hr/>			
Mean solar time required - - - - -	2	23	43 [·] 65

which is the interval elapsed since mean noon, expressed in mean time; and therefore the time which ought to be shown by a mean time clock.

Vice versa, to convert $2^{\text{h}} 23^{\text{m}} 43^{\text{s}} \cdot 65$ mean solar time, January 2, 1856, into sidereal time for the same meridian.

	h	m	s
Mean interval from mean noon, January 2 - - - - -	2	23	43 [·] 65
Acceleration of sidereal on mean time for the interval	+	23	61
<hr/>			
Sidereal interval from mean noon - - - - -	2	24	7 [·] 26
Sidereal time at mean noon, January 2 - - - - -	18	45	16 [·] 78
<hr/>			

Sidereal time required - - - - - $21^{\text{h}} 9^{\text{m}} 24^{\text{s}} \cdot 04$

which ought to be the time shown by the sidereal clock at the instant in question.

If the place of observation be not on the meridian of Greenwich, the sidereal time must be corrected by the *addition* of $9^{\text{s}} \cdot 8565$ for each hour (and proportional parts for the minutes and seconds) of longitude, if the place be to the west of Greenwich; but by its *subtraction*, if to the east. Thus in $9^{\text{h}} 10^{\text{m}} 6^{\text{s}}$ west longitude, the sidereal time at mean noon, January 2, instead of being, as in the foregoing Example, $18^{\text{h}} 45^{\text{m}} 16^{\text{s}} \cdot 78$, must be corrected by adding $1^{\text{m}} 30^{\text{s}} \cdot 37$, thus giving $18^{\text{h}} 46^{\text{m}} 47^{\text{s}} \cdot 15$ for the time to be used, instead of that set down in the column.

The conversion of mean solar to sidereal time, and *vice versa*, may, however, be performed, and with perhaps less liability to error, by means of this and of the column entitled *Mean Time of Transit of the First point of Aries*, at page XX. of each month, using the Tables of Time Equivalents, inserted at pages 556 to 559.

To convert mean solar into sidereal time: To the sidereal time at the *preceding* mean noon add the sidereal interval corresponding to the given mean time; the sum will be the sidereal time required. (See Example at page 557.)

To convert sidereal into mean solar time: To the mean time at the *preceding* sidereal noon, add the mean interval corresponding to the given sidereal time; the sum will be the mean solar time required.

In this mode of reduction there is not of Acceleration and Retardation, any additive.

The Tables of Time Equivalents ditto retardation, in containing the values of in-

terms of the other, instead of the *corrections*, respecting the proper application of which, a difficulty is sometimes felt by unpractised computers.

Sidereal time at mean noon is also used in finding the mean time of transit of a heavenly body.

Page III. of each Month.

The *Sun's Longitude*, here given, is affected with aberration, and reckoned from the true equinox: it is therefore the apparent longitude of the Sun at the instant of mean noon; or it is (if ρ denote the Radius Vector) the true Longitude of the Sun at the time $0^h - 497^s \cdot 235$, because aberration causes the Sun to appear behind its true place in the Ecliptic.

The *Sun's Latitude* is the angular distance of the Sun's centre from the plane of the Ecliptic, measured on a circle perpendicular to that plane.

The *Logarithm of the Radius Vector of the Earth* is the logarithm of the distance between the centre of the Earth and the apparent place of the centre of the Sun at mean noon, the mean distance, or the semi-axis major of the orbit, being considered unity.

These quantities are derived immediately from the Solar tables, and enter into, indeed are the foundation of, nearly all the subsequent operations in the Ephemeris. Whenever the true longitude of the Earth is required, as in calculating the Geocentric position of a Planet or Comet from its Heliocentric position, it is necessary to reduce the apparent longitude of the Sun to the true, by correcting it for aberration. The Sun's aberration for every tenth day is given at page 242, and may thence be readily obtained for any other day of the year. (See *Sun's Aberration*, page 583.) In strictness, the *Logarithm of the Radius Vector* should also be corrected for aberration, but this is generally neglected, the correction being too small to affect the accuracy of the results in practice.

The Sun's longitude, entering into the expressions for aberration and Solar nutation, is required for the reduction of the Stars' places.

The *Moon's Semidiameter* is the angle under which her Semidiameter would appear if viewed from the centre of the Earth; and her *Horizontal Parallax* is the greatest angle under which the Earth's Equatorial Semidiameter would appear if seen from the centre of the Moon. The former is requisite to obtain the position of the centre from an observation of the Moon's limb, as in all cases of altitudes or lunar distances. The latter, for computing the horizontal parallax of the Moon at any given latitude on the Earth, considered as a Spheroid; also for finding the parallax in altitude, Right Ascension, &c., for the purpose of reducing an observation of the Moon made on the surface of the Earth, to what it would be if made at the centre.

In reducing observations of the Moon made at sea, the horizontal equatorial parallax is generally used for finding the parallax in altitude, without regarding the previous reduction to the Spheroid; but in calculations requiring considerable precision, as in lunar occultations and solar eclipses, this reduction cannot be dispensed with.

Example. To find the Moon's Semidiameter and Horizontal Parallax at 6^h A.M. February 23, 1856, at a place 15°, or 1^h to the East of Greenwich. The civil time at the place expressed in mean astronomical time, is February 22^d 18^h, from which subtracting 1^h, because the place is to the East of Greenwich, we have February 22^d 17^h for the corresponding time at Greenwich, or 5^h after midnight. Proceeding from the semidiameter given for midnight of the 22^d, we must compute the ψ

portional part of the variation in 12 hours due to the time elapsed since midnight, viz. 5^h; and for ordinary purposes at sea, it will suffice simply to take this proportional part for the correction of the registered value preceding the given time; thus the semidiameter for midnight, or 12^h, of the 22nd, is 14' 42''·5, and for the 23rd at noon, or 24^h, it is 14' 42''·9; the difference 0''·4 is the variation in 12 hours. Therefore,

$$12^h : 0''\cdot4 :: 5^h : 0''\cdot2,$$

which *added* (because the quantities are increasing) to 14' 42''·5, gives 14' 42''·7 for the Moon's Semidiameter at the time proposed. Similarly the Horizontal Parallax at midnight of the 22nd is 53' 58''·6; and at noon of the 23rd it is 54' 0''·0; the difference 1''·4 is the variation in the 12 hours which include the given time; therefore, 12^h : 1''·4 :: 5^h : 0''·6, which *added* (because the quantities are increasing) to 53' 58''·6 gives 53' 59''·2 for the Horizontal Parallax required. If greater accuracy be desired, a further correction must be applied to the values just obtained, on account of second differences, to compensate the error produced by supposing the first differences uniform. But the *greatest* error in the semidiameter which can arise by this supposition in the present instance is not one-tenth of a second; for, select four semidiameters from the Ephemeris, two preceding, and two following the given time, and take the first and second differences thus:—

February 22,	h	'	"				
	0	14	42	5	+	0	"
	12	14	42	5	+	0	4
	23,	0	14	42	9	+	0
	12	14	43	7	+	0	4

The mean of the second differences is 0''·4 and $\frac{1}{2}$ of this, which is the *greatest* effect, is only 0''·05.

A similar operation performed on the Parallaxes will show the error that would arise on the supposition of uniform or equal first differences, to be two-tenths of a second.

Page IV. of each Month.

The *Moon's Longitude and Latitude* at Mean Noon and Midnight indicate the position of the Moon at these respective times, referred to the Ecliptic and the true Equinox, as it would be seen from the centre of the earth. They are the results deduced immediately from the Lunar Tables, and are the foundation of all subsequent calculations in which the Moon is concerned. These quantities are now of little use to the seaman, as the position of the Moon, with respect to the Equator, is given for every hour in the succeeding pages; but the Moon's Longitude is involved in the formulæ for nutation, and is therefore necessary for its determination. In finding the Moon's Longitude and Latitude for any other times than those of Mean Noon and Midnight, it is necessary to apply the equation of second, and sometimes even of third and fourth differences, on account of the irregular variation of her motion.

The *Moon's Age* at Mean Noon is the Mean Time elapsed since her last conjunction with the Sun, or since the Sun and Moon were in the same longitude. The numbers in this column represent her age expressed in days, and decimal parts of a day.

The *Moon's Meridian Passage*.—This column contains the time, to the nearest tenth of a minute, at which the Moon's centre passes the meridian.

of Greenwich, and is useful to indicate when the Latitude may be obtained from an observed meridian altitude of the Moon; also, in conjunction with a Table of Semi-diurnal Arcs, to determine approximately the times of the rising and setting of the Moon: it is likewise useful in finding the time of High Water.

When the symbol (ζ) denoting conjunction occurs, as on February 5, we are to understand that the Moon does *not* pass the *upper* meridian on that day at Greenwich. This is the case once in every lunation, and arises from the circumstance of the Lunar day being greater than the Mean Solar day, and including it within its limits. In the present instance, the excess is $1^h 0^m \cdot 2$, or the lunar day is equal to $25^h 0^m \cdot 2$ Mean Solar time; the Moon passes the meridian on the 4th at $23^h 24^m \cdot 5$, or $35^m \cdot 5$ *previously* to the noon of the 5th, and does not return to the same meridian until $0^h 24^m \cdot 7$ *after* the noon of the 6th. For the same reason there is also one day in every lunation on which the Moon does not transit the *lower* meridian, and this happens about the time of opposition, or when the difference of longitude of the Sun and Moon is 180° . In the list of Moon-culminating Stars, at pages 444 to 486, the days on which only one transit occurs are readily seen. On January 7th (page 444), for instance, it appears that the Moon transits the *lower* meridian only, while on January 21st (page 446), the only transit is that at the *upper* meridian.

To find the Mean Time of Transit under any other Meridian, suppose 45° or 3^h West of Greenwich, on January 15, 1856. The Meridian being to the West of Greenwich, the Transit will take place *after* the Greenwich time of Transit on the 15th; therefore take the difference between the Meridian Passages on the 15th and 16th, which is $0^h 50^m \cdot 4$. Then $24^h : 0^h 50^m \cdot 4 :: 3^h : 6^m \cdot 3$, which *added* to the Greenwich Mean Time of Transit gives $6^h 54^m \cdot 8$ for the Mean Time of Transit at the given Meridian. Had the assumed Meridian been 3^h to the East of Greenwich, the Transit would have taken place *before* the Transit at Greenwich, and the proportional part of the difference between the 14th and 15th, must in this case have been *subtracted*. The times thus deduced are only approximate; but they are sufficiently accurate for the purposes usually required.

Pages V. to XII. of each Month.

The *Moon's Right Ascension and Declination* for every hour of the day, with the *Difference of Declination for 10 minutes*. By means of the quantities here given, the Latitude, Time, Azimuth, Moon's rising and setting, &c., may be deduced, with nearly as little labour as is required in the case of the Sun. The numbers represent the position of the Moon, as it would appear from the centre of the Earth, with respect to the Equator and the true Equinox; and they are given for every hour, with the view of rendering any correction for second differences unnecessary, except where extreme precision is required. The Right Ascension for any time is readily obtained by simply adding the proportional part of the hourly variation due to the interval elapsed since the preceding hour. Thus, suppose the Right Ascension of the Moon were required at $8^h 45^m$ mean time of January 12, in longitude 60° , or 4^h east of Greenwich time, $8^h 45^m$, diminished by 4^h , gives the corresponding Greenwich Right Ascension at 4^h is $23^h 48^m 40^s \cdot 54$, and at 5^h it is $23^h 50^m 02^s \cdot 78$, is the increase in the interval, or 60^m . Hence, $1^m 35^s \cdot 83$, which being added to the Right Ascension at 4^h , the Right Ascension at $4^h 45^m$ at Greenwich, or at $8^h 45^m$ the Declination, we make use of the numbers $1^m 35^s \cdot 83$. The number in this column standing

opposite to any hour is $\frac{1}{3}$ of the difference of the Declinations at that and the following hour. We therefore say, $10^m : 166'' \cdot 89 :: 45^m : 12' 31'' \cdot 0$, which being subtracted (because the Declinations are decreasing) from $S. 4^\circ 18' 15'' \cdot 4$, the Declination at 4^h , gives $S. 4^\circ 5' 44'' \cdot 4$, for the Declination at the time proposed.

The *Phases of the Moon*. These are given at page XII. to the nearest tenth of a minute. The numbers denote the Greenwich Mean Time, at which the difference of Longitude between the Sun and the Moon is 0° , 90° , 180° , or 270° , being

0° at the New Moon,
 90° at the First Quarter,
 180° at the Full Moon,
 270° at the Last Quarter.

The *Moon's Apogee and Perigee*. The numbers here given indicate, to the nearest hour, the Greenwich Mean Time at which the Moon is respectively at her greatest and least distance from the Earth.

Pages XIII. to XVIII. of each Month.

Lunar Distances.—These pages contain, for every third hour of Greenwich Mean Time, the angular distances between the apparent *centres* of the Moon and certain heavenly bodies, such as they would appear to an observer at the centre of the Earth. When a Lunar Distance has been observed on the surface of the Earth, and reduced to the centre, by clearing it of the effects of parallax and refraction, the numbers in these pages enable us to ascertain the exact Greenwich Mean Time at which the objects would have the same distance. They are arranged, from *west to east*, commencing each day with the object which is at the greatest distance *westward* of the Moon, in the precise order in which they appear in the heavens; W. indicating that the object is west, and E. east of the Moon. Thus we have at one view, by a simple reference to the date, all the lunar distances which are available for the determination of the Longitude.

The columns headed "P.L. of diff." contain the Proportional Logarithms of the Differences of the Distances at intervals of three hours, which are used in finding the Greenwich time corresponding to a given distance, according to the following rule, viz: For the given day, seek in the Ephemeris for the *nearest* distance *preceding*, in order of time, the given distance, and take the difference between it and the given distance; from the proportional logarithm of this difference subtract the proportional logarithm standing opposite to the said *nearest* distance in the Ephemeris; the remainder will be the proportional logarithm of a portion of time to be added to the hour answering to the *nearest* distance, to obtain the approximate Greenwich mean time corresponding to the given distance.

If the distance between the Moon and a Star increased or decreased uniformly, the Greenwich times corresponding to a given distance, as found by the above rule, would be strictly correct; but an inspection of the columns of the Proportional Logarithms in the Ephemeris will show that this is not the case; and as the knowledge of the exact Greenwich time is desirable, a correction must be applied to the time so found for the variation of the differences of the distances. This correction may be obtained by means of the Table at page 560 of following manner:

1. Find the Approximate interval by the preceding
2. Take the difference between the proportional \log of the distances in the Ephemeris which include the given

3. With the approximate interval and this difference, as arguments, take out the correction from the table.

4. If the Proportional Logarithms are *decreasing*, add the correction to the approximate time; but if *increasing*, subtract it: the result will be the accurate Greenwich Mean Time.

Example I.—Suppose it were required to find the Greenwich Mean Time, at which the *reduced* distance between the Moon and α Pegasi would be $47^{\circ} 39' 58''$ on January 15, 1856. It appears, by inspecting the distances, that the time must be between *Noon* and *III^h*: the *nearest* distance *preceding*, in order of time, the given distance is therefore the

Distance at <i>Noon</i>	-	0' 56" 18	and P. L.	-	-	3124
<i>Reduced</i> Distance	-	47 39 58				
Difference	-	0 43 40	-	P. L.	-	6151
Approximate Interval		$1^{\text{h}} 29^{\text{m}} 39^{\text{s}}$	-	P. L.	-	3027

The difference between the Proportional Logarithms in the Ephemeris, at *Noon*, and *III^h*, is 25. Opposite to $1^{\text{h}} 29^{\text{m}} 39^{\text{s}}$ (or the quantity nearest to it, $1^{\text{h}} 30^{\text{m}}$), and under 25, in the Table, we have for the correction 8^s, which, *added* to the Approximate Interval, $1^{\text{h}} 29^{\text{m}} 39^{\text{s}}$, because the Proportional Logarithms are *decreasing*, gives $1^{\text{h}} 29^{\text{m}} 47^{\text{s}}$, for the true interval from *Noon*: and hence the Greenwich Mean Time is $1^{\text{h}} 29^{\text{m}} 47^{\text{s}}$.

We see that, in the preceding Example, the omission of this correction would only produce an error of 2^o in the Longitude. Cases may however occur, in which it would be greater.

It will sometimes happen, that the difference of the Proportional Logarithms will exceed 138, the limit of the Table of Correction; in this case the Table may be entered with the Approximate Interval, and *one-half* or *any fraction* of the difference of the Proportional Logarithms and the corresponding correction *increased in like proportion*.

Example II.—Suppose it were required to find the Greenwich Mean Time, at which the *reduced* distance between the Moon and α Aquilæ would be $42^{\circ} 27' 57''$ on July 15th, 1856. By inspecting the distances, it appears that the time must be between *XVIII^h* and *XXI^h*: therefore take the

Distance at <i>XVIII^h</i>	-	0' 55" 29	and P. L.	-	-	5067
<i>Reduced</i> Distance	-	42 27 57				
Difference	-	0 27 32	-	P. L.	-	8154
Approximate Interval		$1^{\text{h}} 28^{\text{m}} 25^{\text{s}}$	-	P. L.	-	3087

difference between the Proportional Logarithms in the Ephemeris, at *XVIII^h* is 172, one-half of which is 86; under this number in the Table, and nearest the Approximate Interval, is 27^s: the correction is therefore *added* from the Approximate Interval, because the Proportional time at Greenwich is therefore $19^{\text{h}} 27^{\text{m}} 31^{\text{s}}$.

The omission of the correction in the preceding example would produce an error of 13'5 in Longitude; it may, however, be considered as an extreme case, and such as will seldom be met with.

The proportional logarithms also serve to point out the Star which is most favourably circumstanced for accurate observation; that Star being to be preferred which has the least Proportional Logarithm opposite to it; for, the greater the velocity of the Moon from or towards a Star, the greater is the reliance to be placed on an observation of the distance; and it is a property of Proportional Logarithms to decrease as their natural numbers increase: a smaller Proportional Logarithm, therefore, indicates a greater velocity of the Moon, or a greater variation of distance in the interval, upon which the value of the observation depends. Thus, on April 24, 1856, between *Noon* and *III^h*, Mars is the most eligible star, because the Proportional Logarithm, 2635, is less than that of any other; and, by inspecting the columns of Proportional Logarithms, it will appear to deserve the preference until the end of the 26th day.

On the 15th day of July, between *IX^h* and *Midnight*, the following is the order of preference, as indicated by the Proportional Logarithms, viz., Spica μ , Antares, Jupiter, Mars, Fomalhaut, α Pegasi, α Aquilæ.

It is by no means to be inferred from these remarks that observations of any of the distances are to be neglected; on the contrary, every registered star should invariably be observed when an opportunity offers. If, however, on a comparison of results, a considerable difference should be discovered, the Proportional Logarithms will indicate the stars which are least liable to be affected by errors of observation, and therefore deserving of a greater degree of confidence as to the accuracy of the results obtained from them.

Page XIX. of each Month.

Configurations of the Satellites of Jupiter.

In addition to the explanation given at the foot of the page, it may be remarked, that when two Satellites are in or near conjunction, instead of the usual symbol (δ), it has been thought better to place one above the other, without regard to their actual latitudes, but merely to distinguish them in their relation of *upper* and *lower*.

The Satellites are in the superior parts of their orbits, or have Jupiter between them and the Earth, when they are moving from West to East, or towards the right-hand of the page; but they are in the inferior parts of their orbits, or between the Earth and Jupiter, when they are moving from East to West, or towards the left-hand: in the former case Eclipses and Occultations occur, and in the latter Transits of the Satellites and their Shadows.

If an inverted telescope be directed towards Jupiter on April 27, 1856, at 16^h 30^m Mean Time, the Satellites will appear to an observer at Greenwich in the positions as laid down in the Table. The 1st and 2nd Satellites, which are *really* to the left of the Planet, will appear to the right of it; and the 3rd and 4th, which are *really* to the right, will appear to the left.

West and East, at the Satellites with respect invert. Jupiter being which are here laid down on the right-hand to the

inserted to show the positions of the near in a telescope that does not of Greenwich, the Satellites to the West, and those

As regards their positions to the east or west, the page viewed directly, exhibits the Satellites in an inverted order; but if the leaf be turned over, and the page viewed from the other side, they will appear in their real positions. The simplest mode of changing the position of a Satellite from apparent to real, and *vice versa*, is to draw a line from the Satellite through Jupiter's centre, and to place the Satellite upon this line at the same distance from the centre as before, only on the opposite side. If this operation be performed upon the Configurations as laid down in this volume, the Satellites will be reduced to their real positions.

As the Configurations are given for *Mean Astronomical time*, which agrees with *Civil time* only from 0^h to 12^h, or from noon to midnight, when the time exceeds 12^h the excess will indicate the Civil time of the succeeding day of the month.

Thus in June, 1856, the Configurations are given for 15^h 45^m mean time, but the 15th hour from noon is the same as the 3rd hour from the following midnight, when a new Civil day has commenced. The appearances, therefore, relate to 3^h 45^m A.M. of the day following, according to the common mode of reckoning time; that is, the Configurations at 15^h 45^m on June the 26th relate to 3^h 45^m A.M. on June the 27th.

The Configurations enable an observer to distinguish the Satellites from each other, and from Stars in the vicinity of Jupiter.

Page XX. of each Month.

1. *Logarithms of A, B, C, D, for correcting the Places of the Fixed Stars.*

In the formulæ which express the relation of the apparent place of a Star to its mean place, and reciprocally, there are certain factors which are independent altogether of the Star's place, and are therefore common to all Stars. These factors depend upon the longitudes of the Sun, Moon, and Moon's ascending Node.

The Logarithms here given are the logarithms of these independent factors conveniently arranged for incorporation with other terms depending upon each particular Star, according to the method recommended by the late Professor Bessel. They have been computed for Mean Midnight at Greenwich, according to the formulæ exhibited at page 399, omitting in C and D the terms depending on 2ζ .

In the form under which they now appear, they are chiefly used in conjunction with the Catalogue of the British Association,* which contains the Logarithms of the remaining factors depending on the Star's place; and for the reduction of any Star in that Catalogue, they appear to afford every facility that can be desired.

Where, however, the apparent place of any Star, *not in the British Association Catalogue*, is required, similar quantities to those must either be computed with reference to the particular Star, before we can use the A, B, C, D, or recourse must be had to other and independent means; such, for instance, as are afforded by the Table at pages 400 and 401, which serves equally for all Stars. The formulæ by which this Table has been constructed are given at page 399.

The following Examples will sufficiently illustrate the mode of using both Tables.

* "The Catalogue of Stars of the British Association for the Advancement of Science; containing the Mean Right Ascensions and North Polar Distances of eight thousand three hundred and seventy-seven Fixed Stars, reduced to January 1, 1850: together with their annual precessions, secular variations, and proper motions, as well as the logarithmic constants for computing precession, aberration, and nutation. With a Preface explanatory of their Construction and notation. By the late Francis Baily, Esq." London, 1845. 4to.

EXPLANATION.

Required the Correction ($\Delta \alpha$) of the Right Ascension and ($\Delta \delta$) of the Declination of γ Orionis (No. 1687 B.A.C.) for Precession, Aberration, and Nutation, at Greenwich Mean Midnight, on February 5, 1856.

1.—By the B.A.C. Constants and the Logarithms of A, B, C, D.

<p>Mean α, Jan. 1, 1850 - - - - $\begin{matrix} h & m & s \\ 5 & 17 & 5.33 \end{matrix}$ 6 Years' precession and proper motion + 19.33 <hr style="width: 100%;"/> <p>Mean α, Jan. 1, 1856 - - - - $\begin{matrix} h & m & s \\ 5 & 17 & 24.65 \end{matrix}$</p> </p>	<p>Mean δ - - - - - + $\begin{matrix} 0 & 12 & 34.3 \\ 6 & 12 & 34.3 \end{matrix}$ 6 Years' precession and proper motion + 22.3 <hr style="width: 100%;"/> <p>Mean δ - - - - - + $\begin{matrix} 6 & 12 & 56.6 \\ 6 & 12 & 56.6 \end{matrix}$</p> </p>																																																																																				
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2.—By the independent Constants.

For February 5, 1856, the Table at pages 400, 401, furnishes

$$f = - 1.71; g = + 8.16; G = 264.46; h = + 19.54; H = 316.1; i = - 5.89$$

a (in time) converted = $\begin{matrix} 79 & 21 \\ 79 & 21 \end{matrix}$

$$G + a = 344.7 \qquad H + a = 35.22$$

	Logarithms.	Nat. Nos.		Logarithms.	Nat. Nos.
f - - -	- 1.71				
g - - -	+ 0.9117			+ 0.9117	
$\sin(G + a)$ - - -	9.4372		\cos - - -	9.9831	
$\tan \delta$ - - -	9.0370			+ 0.8948	+ 7.85
	<u>- 9.3859</u>	- 0.24			
h - - -	+ 1.2909			+ 1.2909	
$\sin(H + a)$ - - -	9.7625		\cos - - -	9.9114	
$\sec \delta$ - - -	+ 0.0026		\sin - - -	9.0345	
	<u>+ 1.0560</u>	+ 11.38		<u>+ 0.2368</u>	+ 1.73
	<u>$\Delta \alpha$ (in arc) = + 9.43</u>				
	<u>$\Delta \alpha$ (in time) = + 0.629</u>		i - - -	- 0.7701	
			$\cos \delta$ - - -	9.9974	
				<u>- 0.7675</u>	- 5.85
				<u>$\Delta \delta = + 3.73$</u>	

Hence the App. Right As

and the Apparent De

$$+ 0.63 = \begin{matrix} h & m & s \\ 5 & 17 & 25.28 \end{matrix}$$

$$= \begin{matrix} 0 & 12 & 34.3 \\ 6 & 12 & 34.3 \end{matrix}$$

2. *Mean Time of Transit of the First Point of Aries.*

The time in this column shows the distance of the *mean* Sun from the meridian, at the instant when the *true* point of intersection of the ecliptic and equator (called the first point of Aries) is on the meridian of Greenwich; and as the distance of the first point of Aries from the meridian, at the instant the mean Sun is on the meridian, is denominated Sidereal Time at Mean Noon, this may, by analogy, be termed the *Mean Time at Sidereal Noon*. It is the time which ought to be shown by a mean time clock adjusted to the Greenwich meridian, at the moment that a clock, adjusted to sidereal time, indicates exactly $0^h 0^m 0^s$. The use of this column is to facilitate the reduction of sidereal to mean solar time, with the help of the Table of Time Equivalents, given at pages 558 and 559 of this volume, as has been already explained at page 572.

3. *Mean Equinoctial Time.*

Mean Equinoctial Time signifies the Mean Time elapsed since the instant of the Mean Vernal Equinox. The numbers in this column represent this time, at every Mean Noon, in Mean Solar days and fractional parts of a day; it is reckoned from the Mean Vernal Equinox of 1855, between January 1^d and March 21^d·823729, but after March 21^d·823729 from the Vernal Equinox of 1856; for the Equinoctial Year has been assumed, according to Bessel, (*Conn. des Temps*, 1831, Additions, page 154,) equal to 365·242217 Mean Solar days; and as the Equinoctial Time corresponding to the Mean Noon of March 21, 1856, is 364^d·418488, it is evident that the Equinoctial Year of 1855-56 will be completed, and a new year commenced, at 0^d·823729 after Mean Noon of the 21st.

The Fraction of the day at the head of the column is common to all the days of the Equinoctial Year. Thus at Mean Noon of January 19, 1856, the Equinoctial Time is 302^d·418483, and on January 20 it is 303^d·418488, and so on until March 21^d·823729, when the year terminates, and the fractional part of the day changes. At Mean Noon of March 22, 1856, the Equinoctial Time is 0^d·176271, and this fraction is to be annexed to all the numbers in the column of days, from the period of the change until the equinox of 1857.

At the instant the Mean Sun arrives at the Mean Vernal Equinox, it must also be on *some* meridian, and this meridian will then have its equinoctial time corresponding with its Mean Solar time, each of which will be $0^h 0^m 0^s$, and they will continue to correspond throughout the Equinoctial Year. At the end of the Equinoctial Year, the Sun will have passed this meridian 365 times, and have performed, besides, a certain portion of its 366th diurnal revolution, viz. 0^d·242217; it will, therefore, have arrived at some other meridian, which will now, in its turn, reckon the Mean Equinoctial and Mean Solar time from the same point, and remain constant for the year. Thus the meridian, from which the time is reckoned, is shifting its position at the end of every year by 0^d·242217, or 5^h 48^m 47^s·55, to the Westward. Between the Vernal Equinoxes of 1856 and 1857, this itinerant meridian corresponds to Longitude 0^d·176271 East, or 4^h 13^m 49^s·81, East of Greenwich.

This species of time was first introduced in the Supplement to the NAUTICAL ALMANAC for 1828, with a very full explanation of its nature and use. It there appears, that the use of Equinoctial Time is to afford an uniform date, which shall be independent of the different meridians, and of all inequalities in the Sun's motion, and shall thus save the necessity, when speaking of the time of any event's happening, of mentioning at the same time the place where it was observed or computed. Thus, it is the same

thing to say that a comet passed its perihelion on January 5, 1856, at $5^h 47^m 0^s.0$, Mean Time at Greenwich; at $5^h 56^m 21^s.5$, Mean Time at Paris; or at $1855^d 288^d 15^h 49^m 37^s.36$ Equinoctial Time; but the former dates make the localities of Greenwich and Paris enter as elements of the expression; whereas the latter expresses the period elapsed since an epoch common to all the world, and identifiable independently of all localities. By this means all ambiguities in the reckoning of time are supposed to be avoided.

To convert Mean Solar into Equinoctial Time: To the corresponding Greenwich Mean Time add the Equinoctial Time at Mean Noon of the same day at Greenwich: the sum will be the Equinoctial Time required. Thus, in the instance of the comet before alluded to, Paris being $9^m 21^s.5$ East of Greenwich, subtract this from the Paris time and we get $5^h 47^m 0^s.0$ for the corresponding Greenwich Time, to which add $288^d 418488$, or $288^d 10^h 2^m 37^s.36$, the Mean Equinoctial Time at Greenwich Mean Noon of January 5, and the sum will represent the Mean Equinoctial Time of the Comet's passage of its perihelion, viz., $288^d 15^h 49^m 37^s.36$, from the Vernal Equinox of the year 1855.

4. Day of the Year.

The numbers in this column indicate the complete days at mean noon which have elapsed since mean noon of January 1. Mean noon of January 1 is therefore reckoned 0, and 1 is found opposite to that of January 2, because at that instant one entire day has elapsed.

5. Fraction of the Year.

These fractions are the quotients found by dividing the numbers in the preceding column by 365.25 . The day and fraction of the year are useful in many Astronomical calculations.

Obliquity of the Ecliptic. (Page 242.)

The apparent inclination of the plane of the Ecliptic to that of the Equator is here given for every 10th day of the year, and continued to January 5 of the following year, marked December 36 for the sake of convenience. This inclination is ever varying, as well from the effect of its mean diminution, as of the nutation of the earth's axis: it is an important element in deducing the positions of the heavenly bodies, with reference to either of the planes, when we know their positions with respect to the other; as, for instance, in computing Right Ascensions and Declinations from Longitudes and Latitudes, and *vice versa*. If the apparent Obliquity be required for any date not to be found in the Table, it may be obtained by simply taking the proportional part of ~~the variation~~ of the obliquity corresponding to the interval which comprises the ~~g^t~~ ^{thus, the apparent} Obliquity on October 31, 1856, is $23^\circ 27' 37'' 85$. ^{of the Obli-} quity in the ten days between October the 27th and No. ^{$'' 18$, or} $0'' 018$ for one day, and this being multiplied by 4, ^{the} ~~the~~ ^{27th and the 31st, gives $0'' 07$, to be subtra} ~~27th.~~ For most purposes, however, the 0

Table nearest to the given date is sufficient, as is evident from an inspection of the quantities.

Sun's Horizontal Parallax. (Page 242.)

The Sun's Horizontal Parallax is the *greatest* angle under which the equatorial semidiameter of the earth would appear at the Sun's centre. It varies inversely as the distance, and the numbers in this column show the values for every tenth day of the year.

The Parallax serves for reducing a Solar observation made at the surface of the earth to what it would have been if made at the centre.

Sun's Aberration. (Page 242.)

The progressive motion of light, combined with the motion of the Earth in its orbit, causes the Sun to appear in a different position from that which he really occupies, the true position being always in advance of the apparent. The numbers in this column indicate, for every 10th day of the year, the amount of Aberration, or the quantity to be applied to the *true* longitude of the Sun to obtain the *apparent* longitude. The longitudes derived from the Solar Tables include Aberration, and are therefore *apparent* longitudes, such as are contained in this Ephemeris. If the *true* longitude of the Sun be wanted, as is the case in finding the longitude of the Earth for the calculation of the Geocentric place of a body, the aberration must be applied with a contrary sign. Thus, on June 9, 1856, at Mean Noon, by *adding* $20''.10$, the amount of aberration, to $78^{\circ} 45' 45''.0$, the apparent longitude of the Sun, we obtain $78^{\circ} 46' 5''.10$ for the true longitude.

Precession in Longitude. (Page 242.)

This column contains the amount of the retrograde motion on the Ecliptic of the point of intersection of the Equator and Ecliptic, or first point of Aries, for each 10th day from January 1, 1856, and is useful for reducing a longitude reckoned from the *Mean* Equinox of any given date to that of January 1, or any other date. Thus, suppose it were required to refer the true longitude of the Sun on December 6, 1856, to the mean Equinox of January 1, 1856.

The *apparent* longitude, from the True Equinox of December 6, is $254^{\circ} 37' 34''.5$; the aberration $-20''.73$ and the Equation of the Equinoxes $-4''.19$ being applied with the signs changed, give $254^{\circ} 37' 59''.42$ for the *true* longitude from the mean Equinox of December 6; and subtracting $46''.77$, the amount of precession, there results $254^{\circ} 37' 12''.65$ for the true longitude of the Sun on December 6, but reckoned from the mean Equinox of January 1, 1856.

Equation of the Equinoxes. (Page 242.)

The Solar and Planetary Tables furnish us with the places of the Heavenly Bodies referred to the Mean Equinox; but the true place of the Equinox at any time differs from its mean place, by a quantity which is termed the Equation of the Equinoxes; and the numbers here given show the value of the Equation for every 10th day of the year. They are to be applied, with their proper signs, to the Longitudes reckoned from the Mean Equinox, to obtain the values with respect to the True Equinox.

If the Longitude of a body be given with reference to the true Equinox, as in this required to find its Longitude reckoned from the Mean Equinox,

the Equation of the Equinoxes must be applied with a contrary sign. Thus, the longitude of the Sun, reckoned from the true Equinox, on July 19, 1856, at Mean Noon, is $116^{\circ} 54' 51'' \cdot 4$, and the Equation of the Equinoxes is $-4'' \cdot 64$; therefore, applying it with the contrary sign, the sum $116^{\circ} 54' 56'' \cdot 0$, is the Sun's Longitude from the *Mean* Equinox on that day.

The Equation corresponding to any date not contained in the Table, may be obtained in the usual way by interpolation.

The Equation of the Equinoxes in Right Ascension, in a similar manner, enables us to find the *apparent* point of intersection of the Ecliptic on the Equator; and is necessary in computing Sidereal Time.

Mean Longitude of ζ 's ascending Node. (Page 242.)

This column contains the Mean Longitude of the Moon's ascending Node, at Mean Noon of every 10th day of the year, reckoned from the Mean Equinox. The place for any intermediate day is easily found from the daily motion inserted at the foot of the column. The Longitude of the Node is necessary in the calculation of Nutation; it is also sometimes used to determine roughly the Stars which are likely to undergo occultation by the Moon.

Sun's Co-ordinates. (Pages 243 to 250.)

These pages contain for each Greenwich Mean Noon the Sun's true Geocentric Co-ordinates X, Y, Z; X being measured on a line passing through the true Vernal Equinoctial point of the date; Y, on a line in the plane of the Equator, in the direction of the first point of Cancer; and Z, perpendicular to the plane of the Equator, towards the North. To facilitate cometary calculations the values of ΔX , ΔY , ΔZ , are given for converting the co-ordinates X, Y, Z, referred to the true Equinox of the date, into co-ordinates referred to the Mean Equinox of January 1, 1856.

Ephemeris of the Planets. (Pages 251 to 395.)

These pages contain the Geocentric and Heliocentric Places of the Planets, Mercury, Venus, Mars, Jupiter, Saturn, and Uranus.

The Geocentric places are the places of the centres of the planets, as they would appear from the centre of the Earth; the Heliocentric, such as they would appear from the centre of the Sun.

The positions are given for Greenwich Mean Noon and the Time of Transit on every day of the year. The Geocentric Right Ascensions and Heliocentric Longitudes, are reckoned from the True Equinox. The Geocentric Right Ascensions and Declinations are affected with aberration, and are therefore *apparent* positions.

By means of the positions of Venus, Mars, Jupiter, and Saturn, and particularly of Venus and Jupiter, which are frequently visible when the Sun is above the horizon, the Latitude, Time, and Variation of the Compass, may be found with nearly as much facility and accuracy as by the Sun.

The column headed "Meridian Passage" shows the Mean Time of the Planet's Transit over the meridian of Greenwich. As in some days on which the planets do not pass over the Greenwich meridian, asterisks (**). If we refer to the column headed "Mean Time of Transit", we shall find that, in those days, the Mean Time of Transit is not given, but is indicated by two asterisks (**). If we refer to the column headed "Time of Transit", we shall find that, in those days, the Time of Transit is not given, but is indicated by two asterisks (**).

the planetary day is here longer than the mean solar day, and commences so near, but previously, to the noon of the 26th, viz., $3^m \cdot 4$, as to want still $0^m \cdot 8$ of its completion at the termination of the 26th day. The planetary day therefore, includes the solar day of April 26th: it begins *before* the solar day and ends *after* it, and the planet cannot arrive at the meridian at any period of it.

Another phenomenon takes place in the case of the planets, which, however, does not occur with the Moon; it is that of two transits on the same day, which arises from the planetary day being sometimes *shorter* than the solar day, commencing *after* and terminating *before* the solar day, and thus falling entirely within it. This cannot be the case with the Moon, because the lunar day is always greater than the solar day. When two transits occur, the times of both are registered, as at page 262, June 21st, where it appears that Mercury passes the Greenwich meridian $1^m \cdot 7$ after Mean Noon of the 21st, and again at $23^h 55^m \cdot 4$ on the same day, or $4^m \cdot 6$ before the arrival of the following Mean Noon.

The positions of the planets for any time not given in the Ephemeris, and under any other meridian than that of Greenwich, are to be found by interpolation in the usual way. *Example:* Required the Right Ascension and Declination of Venus at 6^h Mean Time on June 15, 1856, in longitude 30° west of Greenwich; also the time of Venus' passage over this meridian on the same day. The difference of longitude 2^h added (because it is west) to the given time, gives 8^h for the corresponding Greenwich time.

1. *For the Right Ascension.* The Right Ascension on June 15 is $4^h 54^m 18^s \cdot 44$, and on June 16 it is $4^h 59^m 33^s \cdot 20$; the difference $5^m 14^s \cdot 76$, is the variation of the Right Ascension in 24 mean hours; therefore $24^h : 5^m 14^s \cdot 76 :: 8^h : 1^m 44^s \cdot 92$, the proportional part of the variation answering to 8^h ; and this proportional part added (because the Right Ascensions are increasing) to $4^h 54^m 18^s \cdot 44$, the Right Ascension at mean noon on June 15, gives $4^h 56^m 3^s \cdot 36$ for the Right Ascension required.

2. *For the Declination.* The Declination on June 15 is N. $22^\circ 14' 42'' \cdot 7$, and on the 16th it is N. $22^\circ 25' 1'' \cdot 6$, the difference, $10' 18'' \cdot 9$, is the variation in 24 hours; and the proportional part of this variation for 8^h is $3' 26'' \cdot 3$, which, added to the Declination at noon on the 15th, gives N. $22^\circ 18' 9'' \cdot 0$ for the Declination required.

3. *For the Meridian Passage.* Take the difference of the times of two consecutive transits; and considering this difference as an acceleration or retardation of the Meridian Passage while the planet has passed over 24^h of geographical longitude, take the proportional part of it, due to the difference of meridians, for a correction to be applied to the Meridian Passage at Greenwich, bearing in mind that in east longitude the passage precedes that at Greenwich, when times are accelerated, and follows it, when they are retarded; and the contrary in west longitude. In the present case Venus passes the meridian of Greenwich on June 15 at $23^h 19^m \cdot 8$, and on June 16 at $23^h 21^m \cdot 1$, the difference is $1^m \cdot 3$, therefore $24^h : 1^m \cdot 3 :: 2^h : 0^m \cdot 1$, the proportional part to be added to $23^h 19^m \cdot 8$, (because the passages are accelerated, and the longitude is west of Greenwich,) which gives $23^h 19^m \cdot 9$, mean time at the given place, for the Meridian Passage. Where great accuracy is not required, as in predicting the time of passage, in order to be prepared for observing the altitude of the planet on the meridian, for the variation of the latitude, this method will suffice.

The Right Ascension and Declination at Transit over the Meridian at Greenwich, are readily reduced to the time of transit over any other meridian not far distant, by means of their Variations in 1 hour of Longitude. Thus: prefix the sign — to the Longitude of the proposed meridian if it be east of Greenwich, but + if it be west, and multiply it by the variation; the product applied *algebraically* (South Declination being considered as negative) to the transit results for Greenwich, will give those for the proposed meridian. *Example:* Suppose the Right Ascension and Declination of Venus were required at Vienna on September 23rd, 1856. Vienna is east of Greenwich $1^{\text{h}} 5^{\text{m}} 31^{\text{s}}.9$, or $-1^{\text{h}}.092$, and the "Variation of Right Ascension in 1 hour of Longitude" on September 23rd is $+11^{\text{s}}.40$: the product of these numbers is $-12^{\text{s}}.45$, which, applied to $13^{\text{h}} 8^{\text{m}} 28^{\text{s}}.35$, the Transit Right Ascension at Greenwich, gives $13^{\text{h}} 8^{\text{m}} 15^{\text{s}}.90$ for that at Vienna. The Variation of the Declination on September 23rd is $-75^{\text{s}}.4$, and the product of $-75^{\text{s}}.4$ and $-1^{\text{h}}.092$ is $+1' 22^{\text{s}}.3$, which applied to S. or $-6^{\circ} 23' 47^{\text{s}}.5$, gives S. $6^{\circ} 22' 25^{\text{s}}.2$ for the Declination at Vienna.

The "Sid. Time of Sem. pass. Mer." (Sidereal Time of the Semidiameter passing the Meridian,) serves to reduce an observation of the Right Ascension of the limb, to that of the centre, and the "Semidiameter" answers a similar purpose for the Declination.

The "Hor. Par.," or Horizontal Parallax, serves for reducing an observation made at the surface to the centre of the Earth.

Fixed Stars. (Pages 396 to 443.)

In pages 396 to 398 are given the mean Right Ascensions and Declinations of 100 principal fixed Stars for Jan. 1, 1856, together with their Annual Variations.

North Declination is distinguished by N., and South Declination by S.

The sign + prefixed to an Annual Variation of Right Ascension indicates that the variation is to be *added to*, and the sign —, that it is to be *subtracted from*, the Right Ascension: also, for Stars having *North* Declination, + signifies *add*, and — *subtract*: but for Stars of *South* Declination, + denotes that the Variation is to be *subtracted from*, and — that it is to be *added to*, the Declination.

Example 1. Required the Mean Right Ascension and Declination of α Tauri or *Aldebaran* on May 31, 1856. The Annual Variation of the Right Ascension is $+3^{\text{s}}.4339$; the Fraction of the year corresponding to May 31, is $.413$ (page XX. of May); the product of these numbers ($1^{\text{s}}.418$) is the proportional part of the annual variation due to the period elapsed since January 1, which *added*, because the sign is +, to the Mean Right Ascension on Jan. 1, *viz.*, $4^{\text{h}} 27^{\text{m}} 39^{\text{s}}.705$, gives $4^{\text{h}} 27^{\text{m}} 41^{\text{s}}.123$, for the Mean Right Ascension on May 31. The Annual Variation of the Declination is $+7^{\text{s}}.687$, which, multiplied by $.413$ as before, and the product ($3^{\text{s}}.17$) *added*, because the sign is + and the Declination *North*, to the Mean Declination on Jan. 1, 1856, *viz.*, N. $16^{\circ} 12' 56^{\text{s}}.97$, gives N. $16^{\circ} 13' 0^{\text{s}}.14$, for the Mean Declination required.

Example 2. Required the Mean Right Ascension and Declination of β Ursæ Minoris on June 1, 1856. Here the Annual Variation of Right Ascension is $-0^{\text{s}}.2634$, and the fraction of the Year $.416$ (page XX. of June) therefore being *subtracted*, because the sign is —, from $14^{\text{h}} 51^{\text{m}} 10^{\text{s}}.450$, the Right Ascension on Jan. 1, 1856, gives $14^{\text{h}} 51^{\text{m}} 10^{\text{s}}.1866$, for the Right Ascension on June 1, 1856.

For the Declination, we have the Annual Variation = $-14''.754$, which, multiplied by $.416$, gives $6''.14$. The Declination being *North*, and the sign of the Variation $-$, this product must be *subtracted* from $N. 74^{\circ} 44' 37''.78$, and the result is $N. 74^{\circ} 44' 31''.64$.

Example 3. Required the Mean Declination of α Scorpii or *Antares* on May 31, 1856. The Annual Variation is $-8''.456$, and the fraction of the Year $.413$; the product of these numbers ($3''.49$) being *added*, because the Declination is *South*, and the sign of the Variation $-$, to the Declination on Jan 1, *viz.*, $S. 26^{\circ} 6' 29''.70$, the sum, $S. 26^{\circ} 6' 33''.19$, is the Declination on May 31, 1856.

Next (page 399) follow Bessel's Formulæ of Reduction; and (pages 400 and 401) a Table for the reduction of Stars, independently of the Constants, in the Catalogue of the British Association, an example of which is given at page 580.

The apparent places of α and δ Ursæ Minoris are given for every day of the year, and those of the remaining 98 Stars for every *tenth* day. They indicate the positions which ought to be shown by perfect instruments at the time of the Stars' transit over the meridian of Greenwich; and, therefore, supposing the catalogue of mean places to be correct, they serve to detect any errors of the instruments.

The hours and minutes of Right Ascension, and the degrees and minutes of Declination, are placed at the heads of the columns as constants, and belong equally to all the numbers below them. This arrangement has rendered it necessary in numerous instances, to continue the seconds beyond 60, as the width of the page would not permit of otherwise indicating any change in the minutes. Thus, the apparent Right Ascension of β Aquarii at page 438, on June 29, 1856, is registered $21^h 23^m 60''.72$, and is to be read $21^h 24^m 0''.72$. Again, the Declination of ζ Cygni (same page), on September 17, is registered $N. 29^{\circ} 37' 93''.0$, which signifies $N. 29^{\circ} 38' 33''.0$.

The small figures on the right hand of the vertical column of seconds represent the differences for the quantities above and below them on the left, or the variation of Right Ascension and Declination in 10 days, and serve to find, by interpolation, the values for an intermediate day. As in the case of the Planets before explained, a Star will sometimes arrive at the meridian twice in one Apparent Solar day. When this occurs on one of the given dates, the Star's place is registered for each Transit, as at page 423, for α' Crucis on Sept. 27; but in other cases the day of the Month on which two Transits occur is placed opposite to the interval. In these particular instances the Star passes the meridian 11 times in the 10 Apparent Solar days, and consequently the Right Ascension or Declination at transit on any intermediate day is to be determined by taking $\frac{1}{11}$ th part, instead of $\frac{1}{10}$ th, of the variation in the interval. Thus, at page 414, we find in the instance of ϵ Orionis the figures 13 opposite the interval between June 9 and June 19, indicating that the double transit occurs on June 13, and a difference of $0''.13$ opposite to the interval between the seconds belonging to those dates, $\frac{1}{11}$ of which is $.012$; for the first Transit on June 13, we should therefore multiply $.012$, by the days elapsed since June 10, but for the second and following Transits by the days elapsed increased by 1.

When extreme accuracy is required, the apparent places of the 5 Polar Stars demand further correction, depending on the terms which involve 2ϵ . The apparent places need these corrections, on account of the rapid variation of the argument, ϵ in a day, but they are given in a Table at pages 442, 443, for every 1° 's Longitude, and may be readily applied, agreeably to the precept

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aily aberration are given in the Preface.

Moon-Culminating Stars. (Pages 444 to 486.)

Those Stars are denominated Moon-Culminating Stars, which being near the Moon's parallel of Declination, and not differing much from her in Right Ascension are proper to be observed with the Moon, in order to determine differences of meridians. This is effected by comparing the differences of the observed Right Ascensions of such a Star and the Moon's bright limb at any two meridians. If the Moon had no motion, the difference of her Right Ascension from that of the Star would be constant at all meridians; but in the interval of her transit over two different meridians, her Right Ascension will have varied, and the difference between the two compared differences will exhibit the amount of this variation, which added to the differences of the meridians, shows the angle through which the westerly meridian must revolve before it comes up with the Moon; hence, and knowing the rate of her increase in Right Ascension, the difference of Longitude may be easily obtained.

For the determination of this variation, recourse has hitherto been had to actual observations made at different meridians, because any errors in the computed places of the Moon and Stars are thereby avoided: and the places were formerly given merely with the view of indicating the times when the observations were to be made. In the present List, however, the Right Ascensions are given with every possible degree of accuracy, so that they may be considered, at least approximately, in the light of corresponding observations made at Greenwich, and be taken to represent the indications of the Greenwich instruments, the same as though they had been actually observed. The traveller has thus an opportunity of rendering his observations immediately available for determining his longitude with considerable accuracy.

The *Right Ascension of the Moon's bright limb* and *Declination of her centre*, at the instant of their respective transits at Greenwich, are given for the lower as well as the upper Culmination, *L.* being put to denote the Lower Culmination, and *U.* the Upper Culmination; the Roman numerals indicate the limb of the Moon with reference to its transit over the meridian. The Moon's age at the time of her upper transit, to the nearest tenth of a day, is inserted in the column containing the magnitudes of the Stars.

The numbers in the column "*Var. of ☾'s R.A. in one hour of Long.*" represent the Variation in Right Ascension of the Moon's Limb during the interval of her transit over two meridians, equidistant from that of Greenwich, and *one* hour distant from each other. They have been deduced from the Right Ascensions of the *bright limb*, and therefore include the effect produced by the change of the semi-diameter.

They serve to determine the Longitude where the difference of meridians is not very great; but where this difference is considerable, and extreme accuracy is wanted, that variation in Right Ascension should be used which corresponds to the middle of the interval between the observations, which may be readily obtained by interpolation. They also serve to determine the Right Ascension of the bright limb at its transit over any other meridian. Thus: Multiply the difference of longitude between Greenwich and the given meridian, by the variation; and, according as the given meridian is east or west of Greenwich, subtract or add the product to the Right Ascension at Greenwich; the result will be the Right Ascension of the bright limb at transit over the proposed meridian. *Example:* On October 17, 1856, the Right Ascension of the Moon's second limb is $5^h 28^m 19^s.93$, at its upper transit at Greenwich, and the var

for 1 hour of longitude is $164^{\circ} \cdot 00$: Required the Right Ascension of the limb at its upper transit at Paris. Paris is $9^m 21^s \cdot 5$, or $0^h \cdot 156$, East of Greenwich; therefore, multiplying $164^{\circ} \cdot 00$ by $0 \cdot 156$, and subtracting the product $25^s \cdot 58$ from $5^h 28^m 19^s \cdot 93$, we have $5^h 27^m 54^s \cdot 35$, for the Right Ascension at Paris.

In a similar manner the Declination may be determined at transit over any other meridian not far distant from that of Greenwich, bearing in mind that South Declinations and East Longitudes are to be considered as *negative*. Thus, in the above *Example*: The Moon's Declination at her upper Transit at Greenwich is N. $28^{\circ} 8' 9'' \cdot 1$ and the "Var. of ζ 's Dec. in 1 hour of Long." is $+201'' \cdot 9$, which, multiplied by $-0^h \cdot 156$, gives $-0' 31'' \cdot 5$, to be applied to N. or $+28^{\circ} 8' 9'' \cdot 1$, the Declination at the upper transit at Paris is therefore N. $28^{\circ} 7' 37'' \cdot 6$.

Where an asterisk is placed opposite to a Star's name, it is intended to denote that the Star is favourably situated for observing its Declination along with that of the Moon in both Hemispheres, with a view to the accurate determination of the Moon's Parallax.

The numbers in the column entitled "Sid. Time of ζ 's Sem. pass. mer.," express the Sidereal intervals which the Moon's Semidiameter, at the time of transit at Greenwich, takes in passing the meridian, and therefore serve to determine the Transit of the centre from an observed Transit of either limb.

Phenomena. (Pages 487 to 528.)

Pages 487 to 494 contain all the particulars necessary for indicating the times, places, &c. on the Earth where the Eclipses of the Sun and Moon will be visible; also the Elements which have been used in the calculations.

Pages 495 and 496 contain a list of the Planets and fixed Stars to the sixth magnitude inclusive, the Occultations of which by the Moon will happen when the objects are above the horizon of Greenwich, together with the Sidereal and Mean Times of the Disappearance and Reappearance, and the points on the circumference of the Moon's image, where the Star, viewed with a telescope that inverts, will disappear and reappear. By "Angle from N. Point" is to be understood the arc included between the Star, when in contact, and the point of intersection of the limb with a circle passing through the North Pole and the centre of the Moon's image; and by "Angle from Vertex," the arc between the Star at contact, and the point where a circle, passing through the zenith and the Moon's centre, intersects the limb; the angles in all cases being reckoned towards the right hand round the circumference of the Moon's image as seen in an inverting telescope. These latter angles will be found very useful in observing Occultations of small stars with a telescope not mounted equatorially; and, for the observation of a reappearance, a knowledge of the angle is absolutely necessary to enable the observer to direct his attention to the point of the Moon's limb where the Star will reappear. In some instances, Occultations have been inserted, which taking place in, or near to, the horizon of Greenwich, are not visible there, but may be visible at places not far distant from Greenwich.

Pages 497 to 525 contain the Mean Times of the Eclipses, Occultations, Transits, and Transits of Shadows, of the Satellites of Jupiter, together with diagrams exhibiting the position of each Satellite with respect to the disc of the Planet at the moment of Disappearance or Reappearance, as it will appear in an inverting telescope. These diagrams have been laid down from calculations made for the eclipse nearest to the middle of each month; but they will serve very well for the whole of the month, *except near opposition*, the change in the position of Jupiter and his Shadow in the interval being too small to be appreciable by the eye, as is evident by comparing the

Phases for any two successive months. All the Eclipses which happen when Jupiter is 8° above and the Sun 8° below the horizon of Greenwich, are marked with an asterisk to indicate that they are visible at that place; and those which happen when Jupiter is above, and the Sun below the horizon, are marked with a dagger, as, under very favourable circumstances, they may also be observed.

“Disapp.” denotes the instant of the disappearance of the Satellite, by entering into the shadow of Jupiter; and “Reapp.” the instant of its reappearance at coming out of the shadow. They generally happen when the Satellite is apparently at some distance from the body of Jupiter, except near the opposition of Jupiter to the Sun, when the eclipse takes place near to the body of the planet. Before the opposition, the Disappearances and Reappearances happen on the Western side, but after opposition on the Eastern side, of the planet: with an inverting telescope, however, the appearances will be directly the contrary. Before the opposition, the Disappearances only of the first Satellite are visible: and after the opposition, the Reappearances only. It is seldom, also, that the Disappearance and Reappearance of the second Satellite can be observed at the same eclipse; but both phenomena are generally visible with the third and fourth Satellites.

To find the time at which the Disappearance or Reappearance of any of the Satellites will take place under any other meridian than that of Greenwich, it is merely necessary to *add* the difference of longitude (*in time*) to the time of the phenomenon at Greenwich, if the meridian be *east* of Greenwich, or to *subtract* if it be *west*, and the sum or difference will be the time required. But this determines only the instant of the occurrence of the phenomenon: Jupiter may be below the horizon at this time, or he may be above it, and the intensity of sun-light, or even the brightness of twilight, may be such as to render the Satellites invisible: it is therefore necessary to ascertain the position of the Sun and Jupiter, with respect to the horizon, at the time of the phenomenon: this may be readily accomplished by means of a celestial globe, or near enough for the purpose, by finding the times of rising and setting of the objects, with the assistance of a table of semidiurnal arcs.

The Eclipses of Jupiter's Satellites, especially of the first, afford us, perhaps, the readiest means of determining the longitude; all that is necessary to be known being the exact time of observation: the difference between this time and the time at Greenwich, shows the difference of longitude at once, and it is *east* or *west* of Greenwich, according as the time of observation is *greater* or *less* than the Greenwich time.

Suppose the Disappearance of Jupiter's first Satellite to be observed on June 22, 1856, at Paris at $13^{\text{h}} 30^{\text{m}} 56^{\text{s}} \cdot 4$ Mean Time at that place: by reference to page 508, it appears that the Disappearance will take place at Greenwich at $13^{\text{h}} 21^{\text{m}} 34^{\text{s}} \cdot 9$ Greenwich Mean Time; the difference, $9^{\text{m}} 21^{\text{s}} \cdot 5$, is the difference of longitude between Greenwich and Paris; and because the Paris time is greater than that at Greenwich, we infer that Paris is to the east of Greenwich.

Independent of defects in the tables, there are difficulties attending the observation of these phenomena which unfit them for *accurate* determinations of longitude. Different telescopes give different results; and care should be taken to have recourse to those corresponding observations which have been made under circumstances the most similar, and particularly with telescopes of the same quality. If extreme accuracy is not required, the Eclipses of the Satellites afford a good approximation towards the difference of meridian: but this should on no account be neglected, especially when the Disappearance and Reappearance of the same Satellite are both visible.

The times of Occultation and Transit, are only approximate. They are inserted in order to apprise Astronomers when they are about to happen, as observations of them may tend to improve the Tables of the Satellites. The instruments required to observe them with anything like precision will preclude the possibility of their ever becoming available at sea.

An asterisk signifies that the phenomenon is visible at Greenwich, and a dagger that the phenomenon *may be* visible under favourable circumstances, the limits in either case being the same as those adopted for the eclipses. "Disapp." denotes the disappearance of the Satellite behind the disc of Jupiter, and "Reapp." its reappearance; "Ingress" signifies the beginning of a transit of a Satellite, or its shadow, across the disc of Jupiter, and "Egress" the termination.

On pages 526 to 528 are given the conjunctions in Right Ascension of the Planets with the Moon and with each other, and the conjunctions in Right Ascension and Declination of the Planets with certain Stars; also the times when the Planets are in those parts of their orbits most favourable for observation, with a view to the more accurate determination of their elements; and other notices, chiefly of use to the astronomer.

Saturn's Ring. (Page 529.)

On this page are given the quantities which enable us to determine the position of the Ring of Saturn at intervals of 20 days throughout the year, and whether it be visible or not. The value of p shows the position of the minor axis of the Ring with respect to a circle of declination, those of a, b, a', b' , the Ring's apparent magnitude and a comparison of those of l and l' , its visibility or otherwise. For the plane of the Ring to be *visible*, it is necessary that the Sun and the Earth should be elevated on the same side of it, which is the case during the whole of 1856. The circumstances which determine the *invisibility* of the Ring are, 1st, when its plane passes through the centre of the Sun, or $l' = 0$; 2nd, when it passes through the centre of the Earth, or $l = 0$, and at this time b also $= 0$; 3rd, when the Sun and Earth are on different sides of the plane of the Ring, for the Earth in this case will have the unilluminated side of the Ring turned towards it.

Opposition of Mars. (Pages 530 to 535.)

These pages contain an Ephemeris of Stars proper to be observed with Mars about the time of opposition in 1856, with a view to the determination of the parallax of that planet, from corresponding observations of the differences of declination between the planet and stars made at places differing considerably in latitude, such as the observatories in the northern and southern hemispheres.

The Stars are selected in such manner that there may be always sufficient intervals of time between their transits and those of the planet, to enable the observer to read off the divisions of the circle or micrometer; except in some cases, when two objects, not distant above five or six minutes in declination, will pass through the field, the telescope remaining fixed, and when their difference of declination may be obtained by means of a micrometer.

The positions of Mars are the apparent geocentric places of the planet's centre, with the semidiameter and horizontal parallax, have been reprinted from pages 305, 307, and 309 of the present volume.

That, when both limbs of Mars cannot be conveniently observed on the northern limb should be observed on the odd days, and the

southern limb on the *even* days of the month. This is denoted by the letters N. and S. inserted in the column of Magnitudes.

α VIRGINIS should, when possible, be observed on every night when the planet is observed.

Those astronomers who are possessed of good equatorial instruments, may take repeated measures of the differences of declination between the selected Stars and the Planet on the same night, noting the times at which the observations are made.

Tides. (Pages 536 to 539.)

The Mean Time of High Water at London Bridge is here given for every day of the year, on the assumption that the time of high water on full and change days, or the *Establishment of the Port*, is $2^h 7^m$. The first high tide which happens after Mean Noon of any day is inserted in the 1st column, and the second in the 2nd column. Where a line (—) is inserted, it indicates that there is only *one* high tide on that day. Thus on April 15 there is only one high tide: it occurs at $11^h 40^m$, but the succeeding high tide does not take place until 11^m after mean noon of April 16.

The times of high water at full and change of the Moon, as given at pages 538 and 539, are reckoned from *Apparent Noon*: they represent the *Establishments of the Ports*, that is, the *actual times of High Water when the Moon passes the meridian at the same time as the Sun*; or the *intervals* between the times of Transit of the Moon and the times of High Water *on full and change days*. They serve to determine the time of high water on any other day at those places in the usual manner.

Tables. (Pages 540 to 566.)

Page 540 contains two Tables, the first showing the *Mean Time of the greatest Libration of the Moon's Apparent Disc*; and the second, the *Illuminated portion of the Discs of Venus and Mars* at the middle of each month.

Pages 541 to 552 contain Elements for facilitating the computation of Occultations of certain Stars by the Moon.

These are:—1. The *Apparent* places at Greenwich Mean Midnight, of the Fixed Stars to the sixth magnitude inclusive, the occultations of which will take place above the horizon at Greenwich.

2. The *Apparent* Places of those Planets and *all* Stars to the fifth magnitude inclusive, the occultations of which will be visible at *some* part of the Earth.

3. The Greenwich Mean Time at which the Moon would, if viewed from the centre of the Earth, appear to have the same Right Ascension as the Star.

4. The difference of Declination and Position of the Moon, as it would appear with respect to the Star at the instant of conjunction in Right Ascension.

5. The parallels of Latitude *beyond* which the Star cannot be occulted by the Moon.

These Elements are useful in the calculation of an Occultation, for being referable to the Moon and Star, as seen from the centre of the Earth, they are independent of geographical position, and serve equally for all places. It is only necessary to apply the difference of longitude from Greenwich to the Greenwich Mean Time of conjunction, to find the time of conjunction at any other meridian; and it is this time to which the positions of the Moon and Star here given will equally correspond.

Thus, the position of the Moon and ϵ Piscium on Jan. 13, 1856, at $14^h 26^m 9^s$, Mean Time at Greenwich, is the position at $14^h 35^m 30^s \cdot 5$ Mean Time at Paris, because Paris is $9^m 21^s \cdot 5$ east of Greenwich.

By Limiting Parallels are to be understood those parallels of latitude beyond which an occultation cannot *possibly* occur.

Suppose an observer situate at a star, and having the Moon between him and the Earth, and that he could see the Moon projected on the Earth's disc; he would observe it moving across the disc from west to east, covering a zone whose breadth would be equal to the apparent diameter of the Moon. Now it is only within the limits of this zone that the Occultation of a Star by the Moon can take place. To all the places through which the boundary lines pass, the Star will appear just to touch the Moon's limb; and that projected parallel of latitude, to which one of the boundary lines is a tangent, is one of the limiting parallels, while the intersection of the other boundary line with the circumference of the Earth's disc determines the other limiting parallel.

Limiting Parallels are useful to indicate whether at a given conjunction of a Star with the Moon, the positions are likely to produce an occultation in a given latitude, and thus to save considerable labour to the computer.

Thus, suppose from the times of conjunction commencing with August 21, at page 548, it were required to prepare a list of Occultations for Greenwich, whose latitude is $51^{\circ} 28' 38''$ N. On looking down the column of Limiting Parallels we reject at once the first star, because the Limiting Parallels do not comprise the parallel of Greenwich. On the same day we see that τ Arietis may be occulted to all the parallels of latitude between 68 N. and 13 S., which include that of Greenwich; this Star would therefore be fixed upon for calculation if no other considerations existed to cause its rejection. We observe, however, that the conjunction takes place at $18^{\text{h}} 35^{\text{m}} 42^{\text{s}}$, the intensity of sun-light would therefore prevent its being seen, and it would be rejected in consequence. The next Limiting Parallels having Greenwich between them, are 90 N. and 20 N., opposite 136 Tauri, on August 24. The time of conjunction in this instance, as regards sun-light, is favourable; if, therefore, on further inquiry, the Star be found to be above the horizon of Greenwich, we should commence the calculation. It appears, however, on reference to page 496, that the occultation of this star is not visible at Greenwich. On September 8, γ Sagittarii may be occulted between the parallels of 60 N. and 36 N.; and on reference to page 496, it will be seen that the phenomenon is visible at Greenwich.

In pages 553 to 555 are given Tables for determining the Latitude by Observations of the Pole Star out of the Meridian. The method of using them is as follows:

From the observed altitude, when corrected for the error of the instrument, refraction, and dip of the horizon, subtract $1'$.

Reduce the Mean Time of Observation at the place to the corresponding Sidereal Time, by the Table given at page 556.—(See *Tables of Time Equivalents*, following this article.)

With the Sidereal Time found, take out the *first correction*, with its proper sign. If the sign be $+$, the correction must be *added* to the reduced altitude; but if it be $-$, it must be *subtracted*; in either case the result will give an Approximate Latitude.

With the Altitude and Sidereal Time of observation, take out the *second correction*; and with the day of the month and the same Sidereal time, take out the *third correction*. These two corrections *added* to the Approximate Latitude, will give the Latitude of the place.

EXPLANATION.

Example: On March 6, 1856, in Longitude 37° W. at $7^{\text{h}} 43^{\text{m}} 35^{\text{s}}$ Mean Time, suppose the altitude of the Pole Star, when corrected for the error of the instrument, refraction, and dip of the horizon, to be $46^{\circ} 17' 28''$: Required the latitude.

	h	m	s
Mean Time - - - - -	7	43	35
Diff. Long. (37°) in time - - - - -	2	28	0
Greenwich Mean Time - - - - -	10	11	35
Sidereal Time at Greenwich Mean Noon -	22	57	36
Mean Time at Place - - - - -	7	43	35
Acceleration (Tab. page 556) for $10^{\text{h}} 12^{\text{m}}$ -	1	41	0
Sidereal Time of Observation - - - - -	6	42	52
Corrected Altitude - - - - -	46	17	28
Subtract - - - - -	1	0	0
Reduced Altitude - - - - -	46	16	28
With Argument $6^{\text{h}} 42^{\text{m}} 52^{\text{s}}$, First Correction -	0	9	4
Approximate Latitude - - - - -	46	7	24
Arguments, $46^{\circ} 17'$ } Second Correction	+1	9	
$6^{\text{h}} 43^{\text{m}}$ }			
Arguments, March 6, 1856. } Third Correction	+1	21	
$6^{\text{h}} 43^{\text{m}}$ }			
Latitude of the place - - -	N. 46	9	54

which differs only $1''$ from an actual trigonometrical computation.

The *Tables of Time Equivalents*, given at pages 556 to 559, are useful for converting Mean Time into Sidereal Time, and Sidereal into Mean Time, agreeably to the example annexed to each table. They will serve also for Tables of Acceleration and Retardation, by taking the difference between each argument and its equivalent. Thus, in the Table at pages 556 and 557, the *excess* of the sidereal time equivalents above the arguments of mean time shows the *acceleration* of sidereal on mean solar intervals; and in the Table at pages 558 and 559, the *defect* of the mean time equivalents, as compared with the arguments of sidereal time, indicates the *retardation* of mean on sidereal intervals.

On page 560 is given a Table showing the Correction required on account of Second Differences in finding the Greenwich Time corresponding to a reduced Lunar Distance.

The use of this Table has been sufficiently explained, by the Examples given at page 577.

The concluding Table, at pages 561 to 566, contains the *Latitudes and Longitudes of the principal Observatories*. This table has been considerably improved, and will, it is hoped, be gradually perfected by communications from each astronomer, of the latest and most accurate determination of his geographical position.

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SUPPLEMENT
TO
THE NAUTICAL ALMANAC,
FOR THE YEAR
1856.

THIS Supplement contains Ephemerides of the newly-discovered Planets for the year 1853 adapted to the Meridian of Greenwich, with the Elements of the Orbits from which they have been derived, arranged in the order of discovery as indicated by the numerical symbols, which are similar to those adopted by Professor ENCKE in the *Berliner Astron. Jahrbuch* for 1855.

The Elements have been obtained from the following sources :—

⑤ and ⑩, from page 641 of NAUTICAL ALMANAC for 1854.

⑪, from page 627 of NAUTICAL ALMANAC for 1855.

⑥, ⑦, ⑧, ⑨, ⑫, ⑬, ⑭, from page 370 of the *Berliner Astron. Jahrbuch* for 1855.

⑮, from J. R. HIND, Esq.

⑯, ⑰, ⑱, ⑲, from *Ast. Nach.* Nos. 807, 831, 814, 836, respectively.

Neptune, from page 372 of the *Berliner Astron. Jahrbuch* for 1855.

The Longitudes ϵ , ω , and ν of ⑯, ⑲, and ⑳ are reckoned from the Mean Equinox of 1852.0, those of the others from the Mean Equinoxes of their respective Epochs.



ELEMENTS.

	⑥ ASTRÆA. 1851, Apr. 29 ^o 5 M. T. at Berlin.	⑦ HEBE. 1853, Jan. 20 ^o 0 M. T. at Berlin.	⑧ IRIS. 1853, Mar. 23 ^o 0 M. T. at Berlin.	⑨ FLORA. 1848, Jan. 1 ^o 0 M. T. at Berlin.
ε	0 1 " 197 37 6.8	0 1 " 97 16 27.6	0 1 " 162 49 27.0	0 1 " 68 48 47.5
π	135 42 31.7	15 13 58.8	41 18 59.9	33 0 23.2
ν	141 27 47.5	138 32 8.7	259 14 48.7	110 18 3.8
ι	5 19 23.0	14 46 35.1	5 28 16.0	5 53 6.2
φ	10 52 47.8	11 39 21.8	13 25 52.7	9 0 22.2
η	" 857.49958	" 939.49991	" 963.34338	" 1086.13555
	⑩ METIS. 1853, Oct. 9 ^o 0 M. T. at Berlin.	⑪ HYGEIA. 1851, Sept. 28 ^o 5 M. T. at Berlin.	⑫ PARTHENOPE. 1852, July 13 ^o 0 M. T. at Berlin.	⑬ VICTORIA. 1850, Sept. 19 ^o 0 M. T. at Berlin.
ε	0 1 " 26 48 39.8	0 1 " 356 45 11.9	0 1 " 86 2 56.0	0 1 " 339 11 55.9
π	71 40 41.6	228 2 28.7	317 3 50.6	301 52 31.4
ν	68 29 59.7	287 38 26.6	124 59 53.6	235 26 54.4
ι	5 35 55.3	3 47 10.8	4 36 54.3	8 23 6.8
φ	7 5 14.4	5 47 30.9	5 37 32.7	12 36 9.8
η	" 962.77390	" 634.24039	" 926.32568	" 994.47733
	⑭ EGERIA. 1852, Dec. 21 ^o 0 M. T. at Berlin.	⑮ IRENE. 1852, Aug. 3 ^o 0 M. T. at Greenwich.	⑯ EUNOMIA. 1852, Dec. 21 ^o 0 M. T. at Berlin.	⑰ PSYCHE. 1852, Mar. 31 ^o 0 M. T. at Berlin.
ε	0 1 " 229 43 5.4	0 1 " 328 49 52.4	0 1 " 64 5 33.0	0 1 " 149 20 40.8
π	119 36 46.4	178 46 2.5	28 9 5.7	11 27 56.7
ν	43 18 46.6	86 49 55.3	293 55 9.3	150 36 31.0
ι	16 32 59.5	9 6 42.2	11 43 55.0	3 3 36.7
φ	4 53 50.2	9 41 26.0	10 48 12.9	7 31 25.6
η	" 857.08269	" 854.0618	" 827.18108	" 706.3977
	⑱ THETIS. 1852, June 0 ^o 0 M. T. at Berlin.	⑲ MELPOMENE. 1852, July 10 ^o 0 M. T. at Greenwich.	⑳ FORTUNA. 1852, Sept. 27 ^o 354 M. T. at Berlin.	NEPTUNE. 1853, Jan. 0 ^o 0 M. T. at Berlin.
ε	0 1 " 214 32 51.0	0 1 " 302 18 57.06	0 1 " 357 26 29.6	0 1 " 341 44 50.6
π	259 13 18.0	15 15 10.16	32 20 41.9	47 17 7.87
ν	125 26 25.2	150 0 21.28	211 16 57.6	130 9 22.18
ι	5 35 39.3	10 9 2.23	1 32 35.0	1 46 58.97
φ	7 31 10.5	12 30 14.67	9 48 18.9	0 29 58.53
η	" 908.9268	" 1.76766	" 920.43	" 21.55448

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.				
							Earth.		Sun.						
	Noon.			Noon.			Noon.		Noon.						
1853.	h	m	Δ _m	o	'	Δ _m	o	'	Δ _m	o	'	Δ _m	h	m	Δ _m
Jan. 0	21	40.3	+13.4	S. 15	2.4	+62.9	0.5656	+99	0.4806	-10	2	59.7	2	59.7	-25.9
10	21	53.7	13.8	13	59.5	67.7	.5755	81	.4796	11	2	33.8	2	33.8	25.6
20	22	7.5	14.0	12	51.8	72.3	.5836	63	.4785	12	1	42.8	1	42.8	25.4
30	22	21.5	14.2	11	39.5	76.0	.5899	44	.4773	13					25.2
Feb. 9	22	35.7	14.3	10	23.5	79.2	.5943	27	.4760	14	1	17.6	1	17.6	25.0
19	22	50.0	14.4	9	4.3	81.6	.5970	+9	.4746	14	0	52.6	0	52.6	25.1
Mar. 1	23	4.4	14.3	7	42.7	83.3	.5979	-8	.4732	15	0	27.5	0	27.5	25.0
11	23	18.7	14.4	6	19.4	84.3	.5971	25	.4717	17	0	2.5	0	2.5	27.6
21	23	33.1	14.3	4	55.1	84.4	.5946	42	.4700	17	23	34.9	23	34.9	25.1
31	23	47.4	14.1	3	30.7	83.9	.5904	60	.4683	17	23	9.8	23	9.8	25.2
Apr. 10	0	1.5	14.1	2	6.8	82.6	.5844	76	.4666	19	22	44.6	22	44.6	25.3
20	0	15.6	13.9	S. 0	44.2	80.4	.5768	93	.4647	20	22	19.3	22	19.3	25.5
30	0	29.5	13.8	N. 0	36.2	77.6	.5675	110	.4627	20	21	53.8	21	53.8	25.6
May 10	0	43.3	13.5	1	53.8	74.0	.5565	127	.4607	21	21	28.2	21	28.2	25.9
20	0	56.8	13.2	3	7.8	69.6	.5438	144	.4586	23	21	2.3	21	2.3	26.2
30	1	10.0	12.9	4	17.4	64.4	.5294	162	.4563	23	20	36.1	20	36.1	26.6
June 9	1	22.9	12.3	5	21.8	58.4	.5132	179	.4540	23	20	9.5	20	9.5	27.0
19	1	35.2	11.8	6	20.2	51.5	.4953	196	.4517	25	19	42.5	19	42.5	27.6
29	1	47.0	11.1	7	11.7	43.9	.4757	214	.4492	25	19	14.9	19	14.9	28.4
July 9	1	58.1	10.3	7	55.6	35.3	.4543	231	.4467	27	18	46.5	18	46.5	29.2
19	2	8.4	9.1	8	30.9	25.7	.4312	246	.4440	26	18	17.3	18	17.3	30.4
29	2	17.5	7.7	8	56.6	15.5	.4066	260	.4414	28	17	46.9	17	46.9	31.7
Aug. 8	2	25.2	6.2	9	12.1	+4.4	.3806	272	.4386	29	17	15.2	17	15.2	33.3
18	2	31.4	4.2	9	16.5	-7.8	.3534	277	.4357	30	16	41.9	16	41.9	35.2
28	2	35.6	+2.1	9	8.7	20.4	.3257	277	.4327	30	16	6.7	16	6.7	37.5
Sept. 7	2	37.7	-0.5	8	48.3	33.0	.2980	264	.4297	30	15	29.2	15	29.2	40.0
17	2	37.2	3.1	8	15.3	44.3	.2716	241	.4267	32	14	49.2	14	49.2	42.6
27	2	34.1	5.5	7	31.0	54.2	.2475	200	.4235	32	14	6.6	14	6.6	44.8
Oct. 7	2	28.6	7.6	6	36.8	59.4	.2275	143	.4203	32	13	21.8	13	21.8	47.0
17	2	21.0	8.7	5	37.4	58.5	.2132	-75	.4171	34	12	34.8	12	34.8	48.0
27	2	12.3	9.0	4	38.9	51.2	.2057	+2	.4137	34	11	46.8	11	46.8	48.2
Nov. 6	2	3.3	8.2	3	47.7	38.3	.2059	72	.4103	34	10	58.6	10	58.6	47.3
16	1	55.1	6.3	3	9.4	20.6	.2131	135	.4069	35	10	11.3	10	11.3	45.4
26	1	48.8	3.9	2	48.8	-1.5	.2266	181	.4034	36	9	25.9	9	25.9	43.2
Dec. 6	1	44.9	-1.1	2	47.3	+17.4	.2447	210	.3998	35	8	42.7	8	42.7	40.4
16	1	43.8	+1.5	3	4.7	34.7	.2657	226	.3963	36	8	2.3	8	2.3	37.7
26	1	45.3	+4.2	3	39.4	+49.0	.2883	+230	.3927	-37	7	24.6	7	24.6	-35.0
36	1	49.5		N. 4	28.4		0.3113		0.3890		6	49.6	6	49.6	

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
1853.	h	m	Δ_1	o	'	Δ_1		Δ_1		Δ_1	h	m	Δ_1
Jan. 0	8	26.3	- 8.9	N. 9	37.7	+ 78.9	0.1757	- 72	0.3823	+ 40	13	43.2	- 48.2
10	8	17.4	10.0	10	56.6	+ 78.9	.1685	- 72	.3863	+ 40	12	55.0	- 49.2
20	8	7.4	9.9	12	28.7	92.1	.1694	+ 9	.3902	39	12	5.8	49.1
30	7	57.5	8.4	14	5.7	97.0	.1788	94	.3941	39	11	16.7	49.1
Feb. 9	7	49.1	6.1	15	39.7	94.0	.1958	170	.3978	37	10	29.1	47.6
19	7	43.0	6.1	17	5.4	85.7	.2189	231	.4015	37	9	43.8	45.3
Mar. 1	7	39.8	3.2	18	18.6	73.2	.2461	272	.4051	36	9	1.5	42.3
11	7	39.6	- 0.2	19	18.5	59.9	.2756	295	.4086	35	8	22.1	39.4
			+ 2.7			46.1		302		33			36.6
21	7	42.3	5.2	20	4.6	33.3	.3058	301	.4119	33	7	45.5	34.0
31	7	47.5	7.4	20	37.9	21.0	.3359	290	.4152	33	7	11.5	31.9
Apr. 10	7	54.9	9.2	20	58.9	+ 9.7	.3649	275	.4184	32	6	39.6	30.1
20	8	4.1	10.7	21	8.6	+ 0.9	.3924	257	.4215	31	6	9.5	28.8
30	8	14.8	11.9	21	7.7	10.9	.4181	239	.4245	29	5	40.7	27.4
May 10	8	26.7	12.8	20	56.8	20.1	.4420	220	.4274	28	5	13.3	26.5
20	8	39.5	13.6	20	36.7	28.6	.4640	200	.4302	26	4	46.8	25.8
30	8	53.1	14.1	20	8.1	36.7	.4840	181	.4328	26	4	21.0	25.3
June 9	9	7.2	14.5	19	31.4	43.7	.5021	162	.4354	24	3	55.7	24.9
19	9	21.7	14.7	18	47.7	50.3	.5183	143	.4378	24	3	30.8	24.6
29	9	36.4	15.0	17	57.4	56.2	.5326	126	.4402	22	3	6.2	24.3
July 9	9	51.4	15.0	17	1.2	61.2	.5452	108	.4424	21	2	41.9	24.5
19	10	6.4	15.2	16	0.0	65.5	.5560	91	.4445	20	2	17.4	24.1
29	10	21.6	15.2	14	54.5	69.2	.5651	74	.4465	19	1	53.3	24.2
Aug. 8	10	36.8	15.1	13	45.3	71.9	.5725	56	.4484	19	1	29.1	24.3
18	10	51.9	15.1	12	33.4	73.9	.5781	40	.4503	17	1	4.8	24.4
28	11	7.0	15.1	11	19.5	75.0	.5821	23	.4520	15	0	40.4	24.2
Sept. 7	11	22.1	15.0	10	4.5	75.3	.5844	+ 7	.4535	15	0	16.2	26.8
17	11	37.1	14.8	8	49.2	74.7	.5851	- 11	.4550	14	23	49.4	24.6
27	11	51.9	14.8	7	34.5	73.0	.5840	28	.4564	13	23	24.8	24.6
Oct. 7	12	6.7	14.6	6	21.5	70.7	.5812	45	.4577	11	23	0.2	24.8
17	12	21.3	14.3	5	10.8	67.2	.5767	63	.4588	11	22	35.4	25.1
27	12	35.6	14.2	4	3.6	62.7	.5704	80	.4599	9	22	10.3	25.3
Nov. 6	12	49.8	13.7	3	0.9	57.1	.5624	99	.4608	9	21	45.0	25.7
16	13	3.5	13.5	2	3.8	50.4	.5525	117	.4617	7	21	19.3	25.7
26	13	17.0	13.0	1	13.4	42.6	.5408	136	.4624	6	20	53.4	26.1
Dec. 6	13	30.0	12.4	N. 0	30.8	33.5	.5272	153	.4630	6	20	27.1	26.1
16	13	42.4	11.7	S. 0	2.7	23.3	.5119	171	.4636	4	19		
26	13	54.1	+ 10.8	0	26.0	- 12.2	.4948	- 188	.4640	+ 3			
36	14	4.9		S. 0	38.2		.4760		.4643				

EPHEMERIS OF HEBE FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Date.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
1853. January	h m s	s	o ' "	"	"
3	8 23 18.96	- 2.16	N.10 3 49.2	+ 19.1	5.8
4	8 22 26.44	2.21	10 11 33.2	19.5	5.8
5	8 21 32.85	2.25	10 19 27.3	19.9	5.8
6	8 20 38.25	2.29	10 27 31.1	20.3	5.8
7	8 19 42.72	2.33	10 35 44.1	20.7	5.8
8	8 18 46.31	2.37	10 44 6.0	21.1	5.8
9	8 17 49.12	2.40	10 52 36.5	21.4	5.8
10	8 16 51.21	2.43	11 1 15.1	21.8	5.8
11	8 15 52.65	2.45	11 10 1.2	22.1	5.8
12	8 14 53.53	2.47	11 18 54.6	22.4	5.8
13	8 13 53.91	2.49	11 27 54.7	22.7	5.8
14	8 12 53.91	2.51	11 37 1.0	22.9	5.8
15	8 11 53.58	2.52	11 46 13.1	23.1	5.8
16	8 10 53.01	2.53	11 55 30.3	23.3	5.8
17	8 9 52.28	2.53	12 4 52.3	23.5	5.8
18	8 8 51.46	2.53	12 14 18.6	23.7	5.8
19	8 7 50.64	2.53	12 23 48.6	23.8	5.8
20	8 6 49.91	2.53	12 33 22.0	23.9	5.8
21	8 5 49.32	2.52	12 42 58.0	24.0	5.8
22	8 4 48.96	2.51	12 52 36.3	24.1	5.8
23	8 3 48.92	2.50	13 2 16.3	24.2	5.8
24	8 2 49.25	2.48	13 11 57.5	24.2	5.8
25	8 1 50.06	2.46	13 21 39.5	24.2	5.8
26	8 0 51.39	2.43	13 31 21.8	24.2	5.7
27	7 59 53.33	2.41	13 41 3.9	24.2	5.7
28	7 58 55.93	2.38	13 50 45.5	24.2	5.7
29	7 57 59.27	2.34	14 0 25.9	24.1	5.7
30	7 57 3.45	2.31	14 10 4.9	24.1	5.7
31	7 56 8.49	2.27	14 19 42.1	24.0	5.7
February	7 55 14.48	2.23	14 29 16.9	23.9	5.6
2	7 54 21.49	2.19	14 38 48.9	23.8	5.6
3	7 53 29.58	2.14	14 48 17.8	23.6	5.6
4	7 52 38.82	2.09	14 57 43.4	23.5	5.6
5	7 51 49.24	2.04	15 7 5.1	23.3	5.6
6	7 50 59.93	1.99	15 16 22.4	23.1	5.5
7	7 50 9.95	- 1.94	N.15 25 34.7	+ 22.9	5.5

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.		Log. of Distance from the		Meridian Passage.			
						Earth.	Sun.				
	Noon.			Noon.		Noon.	Noon.				
1853.	h	m	Δ ₁ m	°	'	Δ ₁		h	m	Δ ₂ m	
Jan. 0	12	18.0	+ 5.3	S. 8	29.4	-59.4	0.3726	0.4136	+ 36	17 35.3	-24.2
10	12	23.3	3.1	9	28.8	-59.4	.3503	.4172	223	17 1.1	36.4
20	12	26.4	+ 0.4	10	14.2	45.4	.3280	.4207	220	16 24.7	39.0
30	12	26.8	- 1.9	10	44.4	30.2	.3060	.4241	206	15 45.7	41.5
Feb. 9	12	24.9	4.6	10	56.7	+ 6.8	.2854	.4274	178	15 4.2	44.0
19	12	20.3	7.0	10	49.9	26.8	.2676	.4305	135	14 20.2	46.4
Mar. 1	12	13.3	8.6	10	23.1	45.1	.2541	.4335	79	13 33.8	47.9
11	12	4.7	9.3	9	38.0	60.0	.2462	.4364	- 10	12 45.9	48.6
21	11	55.4	9.1	8	38.0	67.8	.2452	.4391	+ 61	11 57.3	48.3
31	11	46.3	7.8	7	30.2	68.2	.2513	.4417	126	11 9.0	47.0
Apr. 10	11	38.5	5.9	6	22.0	62.2	.2639	.4442	181	10 22.0	45.1
20	11	32.6	3.6	5	19.8	50.6	.2820	.4466	219	9 36.9	42.8
30	11	29.0	- 1.2	4	29.2	37.1	.3039	.4488	245	8 54.1	40.4
May 10	11	27.8	+ 1.2	3	52.1	21.2	.3284	.4509	257	8 13.7	38.1
20	11	29.0	3.3	3	30.9	+ 6.6	.3541	.4529	258	7 35.6	35.9
30	11	32.3	5.1	3	24.3	- 7.3	.3799	.4548	253	6 59.7	34.3
June 9	11	37.4	6.7	3	31.6	19.7	.4052	.4565	243	6 25.4	32.6
19	11	44.1	8.0	3	51.3	30.7	.4295	.4581	229	5 52.8	31.3
29	11	52.1	9.2	4	22.0	40.2	.4524	.4596	214	5 21.5	30.1
July 9	12	1.3	10.2	5	2.2	48.2	.4738	.4610	197	4 51.4	29.2
19	12	11.5	11.0	5	50.4	54.9	.4935	.4622	179	4 22.2	28.4
29	12	22.5	11.7	6	45.3	60.3	.5114	.4634	163	3 53.8	27.6
Aug. 8	12	34.2	12.3	7	45.6	65.0	.5277	.4644	143	3 26.2	27.0
18	12	46.5	12.8	8	50.6	68.1	.5420	.4653	127	2 59.2	26.7
28	12	59.3	13.3	9	58.7	70.5	.5547	.4660	109	2 32.5	26.0
Sept. 7	13	12.6	13.9	11	9.2	72.0	.5656	.4667	91	2 6.5	25.5
17	13	26.5	14.1	12	21.2	72.2	.5747	.4672	74	1 41.0	25.2
27	13	40.6	14.5	13	33.4	72.0	.5821	.4676	57	1 15.8	25.0
Oct. 7	13	55.1	14.8	14	45.4	70.7	.5878	.4679	39	0 50.8	24.5
17	14	9.9	15.1	15	56.1	68.6	.5917	.4681	21	0 26.3	24.3
27	14	25.0	15.3	17	4.7	66.0	.5938	.4682	+ 4	{ 0 0.0 } { 23 59.5 }	24.1
Nov. 6	14	40.3	15.5	18	10.7	62.3	.5942	.4681	- 15	23 35.4	23.8
16	14	55.8	15.6	19	13.0	58.3	.5927	.4680	32	23 11.6	23.7
26	15	11.4	15.7	20	11.3	53.0	.5895	.4677	51	22 47.9	23.7
Dec. 6	15	27.1	15.6	21	4.3	48.8	.5844	.4673	69	22 24.2	23.9
16	15	42.7	15.6	21	53.1	42.5	.5775	.4668	88	22 0.3	23.7
26	15	58.3	+ 15.4	22	35.6	-36.6	.5687	.4661	- 106	21 36.6	-24.0
36	16	13.7		S. 23	12.2		.5581	.4654		21 12.6	

EPHEMERIS OF IRIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Date.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
1853.	h m s	s	° ' "	"	"
March 6	12 8 40.10	- 2.17	S. 10 0 10.2	+ 11.6	4.8
7	12 7 47.67	2.20	9 55 27.5	12.0	4.8
8	12 6 54.58	2.22	9 50 34.9	12.4	4.8
9	12 6 0.88	2.25	9 45 32.7	12.8	4.9
10	12 5 6.63	2.27	9 40 21.4	13.2	4.9
11	12 4 11.89	2.29	9 35 1.1	13.6	4.9
12	12 3 16.74	2.31	9 29 32.4	13.9	4.9
13	12 2 21.23	2.32	9 23 55.4	14.2	4.9
14	12 1 25.43	2.33	9 18 10.5	14.5	4.9
15	12 0 29.41	2.34	9 12 18.3	14.8	4.9
16	11 59 33.21	2.34	9 6 18.9	15.1	4.9
17	11 58 36.90	2.34	9 0 12.9	15.4	4.9
18	11 57 40.58	2.35	8 54 0.7	15.6	4.9
19	11 56 44.27	2.35	8 47 42.7	15.9	4.9
20	11 55 48.05	2.34	8 41 19.3	16.1	4.9
21	11 54 51.98	2.33	8 34 50.9	16.3	4.9
22	11 53 56.12	2.32	8 28 18.1	16.5	4.9
23	11 53 0.53	2.31	8 21 41.0	16.7	4.9
24	11 52 5.26	2.30	8 15 0.2	16.8	4.9
25	11 51 10.37	2.28	8 8 16.2	16.9	4.9
26	11 50 15.92	2.26	8 1 29.5	17.0	4.9
27	11 49 21.97	2.24	7 54 40.3	17.1	4.8
28	11 48 28.57	2.22	7 47 49.1	17.2	4.8
29	11 47 35.76	2.19	7 40 56.4	17.2	4.8
30	11 46 43.62	2.16	7 34 2.8	17.3	4.8
31	11 45 52.19	2.13	7 27 8.4	17.3	4.8
April 1	11 45 1.52	2.10	7 20 13.9	17.3	4.8
2	11 44 11.66	2.06	7 13 19.5	17.3	4.8
3	11 43 22.65	2.02	7 6 26.0	17.2	4.8
4	11 42 34.56	1.98	6 59 33.6	17.2	4.8
5	11 41 47.43	1.94	6 52 42.7	17.1	4.7
6	11 41 1.28	1.90	6 45 53.8	17.0	4.7
7	11 40 16.18	- 1.86	S. 6 39 7.4	+ 16.9	4.7

MEAN TIME AT GREENWICH.												
Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.	
							Earth.		Sun.			
	Noon.			Noon.			Noon.		Noon.			
1853.	h	m	Δ_1	°	'	Δ_1		Δ_1		Δ_1	h	m
Jan. 0	17	6.4	+19.2	S. 19	58.7	-26.1	0.5236	-90	0.3913	-19	22	24.2
10	17	25.6	+19.1	20	24.8	-26.1	.5146	106	.3894	-19	22	4.0
20	17	44.7	+19.0	20	41.9	-26.1	.5040	125	.3873	-19	21	43.7
30	18	3.7	+18.7	20	50.3	-26.1	.4915	143	.3851	-19	21	23.3
Feb. 9	18	22.4	+18.3	20	50.2	-26.1	.4772	161	.3829	-19	21	2.5
19	18	40.7	+17.8	20	42.2	-26.1	.4611	180	.3805	-19	20	41.4
Mar. 1	18	58.5	+17.2	20	27.3	-26.1	.4431	198	.3780	-19	20	19.8
11	19	15.7	+16.5	20	6.3	-26.1	.4233	218	.3754	-19	19	57.6
21	19	32.2	+15.6	19	40.6	-26.1	.4015	237	.3726	-19	19	34.6
31	19	47.8	+14.5	19	11.8	-26.1	.3778	256	.3698	-19	19	10.7
Apr. 10	20	2.3	+13.4	18	41.4	-26.1	.3522	275	.3669	-19	18	45.8
20	20	15.7	+12.0	18	11.5	-26.1	.3247	294	.3639	-19	18	19.7
30	20	27.7	+10.4	17	44.3	-26.1	.2953	310	.3607	-19	17	52.1
May 10	20	38.1	+8.5	17	22.6	-26.1	.2643	324	.3575	-19	17	23.0
20	20	46.6	+6.2	17	8.9	-26.1	.2319	333	.3542	-19	16	52.1
30	20	52.8	+3.6	17	6.2	-26.1	.1986	335	.3509	-19	16	18.8
June 9	20	56.4	+0.8	17	17.6	-26.1	.1651	324	.3474	-19	15	42.8
19	20	57.2	+2.5	17	45.2	-26.1	.1327	298	.3439	-19	15	4.1
29	20	54.7	+5.5	18	30.0	-26.1	.1029	252	.3403	-19	14	22.1
July 9	20	49.2	+8.3	19	30.7	-26.1	.0777	185	.3367	-19	13	37.2
19	20	40.9	+10.1	20	42.5	-26.1	.0592	99	.3330	-19	12	49.5
29	20	30.8	+10.4	21	57.9	-26.1	.0493	6	.3293	-19	12	0.1
Aug. 8	20	20.4	+9.2	23	8.5	-26.1	.0487	+86	.3255	-19	11	10.5
18	20	11.2	+6.5	24	6.7	-26.1	.0573	+160	.3218	-19	10	22.2
28	20	4.7	+3.0	24	48.9	-26.1	.0733	215	.3180	-19	9	36.5
Sept. 7	20	1.7	+0.8	25	13.9	-26.1	.0948	248	.3143	-19	8	54.4
17	20	2.5	+0.8	25	22.7	-26.1	.1196	265	.3106	-19	8	16.0
27	20	6.9	+7.8	25	16.6	-26.1	.1461	269	.3069	-19	7	41.2
Oct. 7	20	14.7	+10.8	24	56.8	-26.1	.1730	265	.3033	-19	7	9.7
17	20	25.5	+13.1	24	23.7	-26.1	.1995	254	.2998	-19	6	41.2
27	20	38.6	+15.2	23	37.9	-26.1	.2249	241	.2964	-19	6	15.0
Nov. 6	20	53.8	+16.7	22	39.2	-26.1	.2490	226	.2931	-19	5	50.7
16	21	10.5	+17.9	21	28.1	-26.1	.2716	210	.2899	-19	5	28.1
26	21	28.4	+18.8	20	4.7	-26.1	.2926	195	.2869	-19	5	6.7
Dec. 6	21	47.2	+19.6	18	29.4	-26.1	.3121	180	.2840	-19	4	46.1
16	22	6.8	+20.2	16	43.2	-26.1	.3301	165	.2814	-19	4	26.3
26	22	27.0	+20.7	14	46.9	-26.1	.3466	149	.2790	-19	4	7.1
31	22	41.4	+12.5	S. 12	41.4	-26.1	.3615	+149	.2768	-19	3	48.4

EPHEMERIS OF FLORA FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Date.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
1853.	h m s	s	° ' "	"	"
July 11	20 47 15.32	- 1.93	S. 19 48 12.4	- 17.5	7.3
12	20 46 28.30	1.99	19 55 14.4	17.7	7.3
13	20 45 39.76	2.05	20 2 20.8	17.9	7.3
14	20 44 49.79	2.11	20 9 32.2	18.1	7.4
15	20 43 58.45	2.16	20 16 48.0	18.2	7.4
16	20 43 5.85	2.22	20 24 8.1	18.4	7.4
17	20 42 12.06	2.27	20 31 31.4	18.5	7.4
18	20 41 17.12	2.32	20 38 57.9	18.6	7.5
19	20 40 21.07	2.36	20 46 26.6	18.7	7.5
20	20 39 23.97	2.40	20 53 57.3	18.8	7.5
21	20 38 25.91	2.44	21 1 29.6	18.8	7.5
22	20 37 26.97	2.47	21 9 2.6	18.9	7.6
23	20 36 27.22	2.50	21 16 36.1	18.9	7.6
24	20 35 26.76	2.53	21 24 9.5	18.9	7.6
25	20 34 25.66	2.56	21 31 42.3	18.8	7.6
26	20 33 24.00	2.58	21 39 13.8	18.8	7.6
27	20 32 21.87	2.60	21 46 43.6	18.7	7.6
28	20 31 19.37	2.61	21 54 11.2	18.6	7.7
29	20 30 16.60	2.62	22 1 36.1	18.5	7.7
30	20 29 13.64	2.63	22 8 57.8	18.4	7.7
31	20 28 10.61	2.63	22 16 15.7	18.2	7.7
August 1	20 27 7.61	2.63	22 23 29.1	18.0	7.7
2	20 26 4.71	2.62	22 30 37.9	17.8	7.7
3	20 25 2.01	2.61	22 37 41.6	17.6	7.7
4	20 23 59.64	2.59	22 44 39.8	17.3	7.7
5	20 22 57.70	2.57	22 51 31.8	17.0	7.7
6	20 21 56.30	2.55	22 58 17.1	16.7	7.7
7	20 20 55.51	2.52	23 4 55.7	16.4	7.7
8	20 19 55.44	2.49	23 11 26.9	16.1	7.7
9	20 18 56.19	2.45	23 17 50.4	15.8	7.7
10	20 17 57.86	2.41	23 24 6.0	15.5	7.6
11	20 17 0.55	2.36	23 30 13.4	15.1	7.6
12	20 16 4.35	- 2.31	S. 23 36 12.4	- 14.7	7.6

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.				
							Earth.		Sun.						
	Noon.			Noon.			Noon.		Noon.						
1853.	h	m	Δ_1	o	'	Δ_1		Δ_1		Δ_1	h	m	Δ_1		
Jan. 0	19	48	+19'3	S. 24	23'7	+48'2	0	5437	+21	0	4080	-18	1	7'7	-20'1
10	20	7'4	19'2	23	35'5	56'2		5458	+4		4062	18	0	47'6	20'1
20	20	26'6	19'0	22	39'3	63'6		5462	-11		4044	19	0	27'5	20'4
30	20	45'6	18'9	21	35'7	70'4		5451			4025	20	0	7'1	21'7
Feb. 9	21	4'5	18'7	20	25'3	76'1		5423	44		4005	21	23	44'4	20'7
19	21	23'2	18'5	19	9'2	81'5		5379	60		3984	21	23	23'7	20'9
Mar. 1	21	41'7	18'1	17	47'7	85'7		5319	75		3963	22	23	2'8	21'3
11	21	59'8	17'8	16	22'0	88'9		5244	90		3941	22	22	41'5	21'7
21	22	17'6	17'4	14	53'1	91'1		5154	107		3919	23	22	19'8	22'0
31	22	35'0	17'2	13	22'0	92'5		5047	122		3896	23	21	57'8	22'2
Apr. 10	22	52'2	16'7	11	49'5	92'7		4925	139		3873	24	21	35'6	22'7
20	23	8'9	16'3	10	16'8	91'8		4786	154		3849	24	21	12'9	23'2
30	23	25'2	15'9	8	45'0	89'8		4632	171		3825	24	20	49'7	23'4
May 10	23	41'1	15'4	7	15'2	86'7		4461	186		3801	25	20	26'3	24'0
20	23	56'5	14'9	5	48'5	82'5		4275	204		3776	25	20	2'3	24'5
30	0	11'4	14'2	4	26'0	77'0		4071	220		3751	25	19	37'8	25'3
June 9	0	25'6	13'5	3	9'0	70'2		3851	238		3725	25	19	12'5	25'9
19	0	39'1	12'6	1	58'8	62'3		3613	254		3700	26	18	46'6	26'8
29	0	51'7	11'5	0	56'5	53'0		3359	271		3674	26	18	19'8	28'0
July 9	1	3'2	10'2	S. 0	3'5	42'3		3088	285		3648	26	17	51'8	29'4
19	1	13'4	8'5	N. 0	38'8	30'3		2803	298		3622	25	17	22'4	31'0
29	1	21'9	6'6	1	9'1	16'9		2505	306		3597	26	16	51'4	32'9
Aug. 8	1	28'5	4'2	1	26'0	+2'7		2199	308		3571	25	16	18'5	35'3
18	1	32'7	+1'5	1	28'7	-11'9		1891	299		3546	25	15	43'2	38'1
28	1	34'2	-1'5	1	16'8	25'9		1592	275		3521	25	15	5'1	40'9
Sept. 7	1	32'7	4'4	0	50'9	37'4		1317	235		3496	24	14	24'2	43'9
17	1	28'3	7'2	N. 0	13'5	44'1		1082	171		3472	24	13	40'3	46'5
27	1	21'1	2'1	S. 0	30'6	44'0		0911	92		3448	23	12	53'8	48'5
Oct. 7	1	12'0	9'5	1	14'6	35'6		0819	-1		3425	23	12	5'3	49'0
17	1	2'2	8'9	1	50'2	20'3		0818	+87		3402	21	11	16'3	48'0
27	0	53'3	7'0	2	10'5	-0'1		0905	165		3381	21	10	28'3	46'2
Nov. 6	0	46'3	4'1	2	10'6	+21'3		1070	220		3360	20	9	42'1	43'3
16	0	42'2	-1'0	1	49'3	41'8		1290	259		3340	19	8	58'8	40'2
26	0	41'2	+2'1	1	7'5	59'7		1549	277		3321	18	8	18'6	37'1
Dec. 6	0	43'3	5'1	S. 0	7'8	74'9		1826	282		3303	16	7	41'5	34'2
16	0	48'4	7'6	N. 1	7'1	87'1		2108	279		3287	15	7	7'3	31'7
26	0	56'0	+9'9	2	34'2	+96'6		2387	+269		3272	-14	6	35'6	-29'4
36	1	5'9		N. 4	10'8			2656			3258		6	6'2	

EPHEMERIS OF METIS FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Date.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
1853.	h m s	s	o ' "	"	"
September 22	1 24 31.07	- 1.83	S. 0 10 27.4	- 11.2	6.8
23	1 23 46.36	1.89	0 14 54.9	11.2	6.9
24	1 23 0.28	1.95	0 19 24.1	11.2	6.9
25	1 22 12.88	2.00	0 23 54.4	11.3	6.9
26	1 21 24.25	2.05	0 28 25.4	11.3	6.9
27	1 20 34.43	2.10	0 32 56.8	11.3	7.0
28	1 19 43.50	2.14	0 37 27.9	11.3	7.0
29	1 18 51.52	2.18	0 41 58.4	11.2	7.0
30	1 17 58.55	2.22	0 46 27.6	11.2	7.0
October 1	1 17 4.67	2.26	0 50 55.1	11.1	7.0
2	1 16 9.96	2.29	0 55 20.4	11.0	7.1
3	1 15 14.51	2.32	0 59 42.9	10.9	7.1
4	1 14 18.36	2.35	1 4 2.2	10.7	7.1
5	1 13 21.63	2.37	1 8 17.8	10.6	7.1
6	1 12 24.39	2.39	1 12 28.9	10.4	7.1
7	1 11 26.73	2.41	1 16 35.3	10.2	7.1
8	1 10 28.75	2.42	1 20 36.4	10.0	7.1
9	1 9 30.51	2.43	1 24 31.6	9.7	7.1
10	1 8 32.11	2.43	1 28 20.6	9.4	7.1
11	1 7 33.64	2.43	1 32 2.8	9.1	7.1
12	1 6 35.18	2.43	1 35 37.8	8.8	7.1
13	1 5 36.80	2.43	1 39 5.4	8.5	7.1
14	1 4 38.59	2.42	1 42 24.9	8.1	7.1
15	1 3 40.64	2.41	1 45 36.0	7.8	7.1
16	1 2 43.03	2.39	1 48 38.3	7.4	7.1
17	1 1 45.84	2.37	1 51 31.6	7.0	7.1
18	1 0 49.16	2.35	1 54 15.3	6.6	7.1
19	0 59 53.07	2.32	1 56 49.3	6.2	7.1
20	0 58 57.61	2.29	1 59 13.2	5.8	7.1
21	0 58 2.89	2.26	2 1 26.7	5.3	7.1
22	0 57 8.98	2.23	2 3 29.4	4.9	7.0
23	0 56 15.96	2.19	2 5 21.2	4.4	7.0
24	0 55 23.90	- 2.15	S. 2 7 1.7	- 4.0	7.0

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.		Log. of Distance from the				Meridian Passage.								
						Earth.		Sun.										
	Noon.			Noon.		Noon.		Noon.										
1853.	h	m	Δ ₁ m	o	'	Δ ₁ '		Δ ₁ '		Δ ₁ '	h	m						
Jan. 0	3	59	7	N.23	30	7	-23	5	0	4154	+159	0	5359	-6	9	17	8	
10	3	56	0		23	7	2	17	1	4313	183		5353	5	8	34	9	
20	3	54	5		22	50	1	10	4	4496	194		5348	6	7	54	2	
30	3	55	4		22	39	7			4690	199		5342	6	7	15	8	
Feb. 9	3	58	3		22	36	1	+2	2	4889	195		5336	7	6	39	4	
19	4	3	1		22	38	3	7	1	5084	188		5329	6	6	5	0	
Mar. 1	4	9	7		22	45	4	10	7	5272	176		5323	7	5	32	2	
11	4	17	8		22	56	1	12	9	5448	164		5316	8	5	1	0	
21	4	27	2		23	9	0	13	8	5612	149		5308	8	4	31	0	
31	4	37	8		23	22	8	13	5	5761	133		5300	7	4	2	2	
Apr. 10	4	49	3		23	36	3	12	0	5894	117		5293	8	3	34	3	
20	5	1	6		23	48	3	9	8	6011	100		5285	9	3	7	3	
30	5	14	6		23	58	1	6	5	6111	85		5276	9	2	41	0	
May 10	5	28	2		24	4	6	+2	7	6196	68		5267	8	2	15	1	
20	5	42	2		24	7	3	1	7	6264	52		5259	9	1	49	8	
30	5	56	6		24	5	6	-1	7	6316	37		5250	10	1	24	8	
June 9	6	11	3		23	59	2	11	5	6353	20		5240	10	1	0	1	
19	6	26	1		23	47	7	16	7	6373	5		5230	10	0	35	6	
29	6	41	0		23	31	0	22	0	6378	11		5220	10	0	11	0	
July 9	6	55	9		23	9	0	27	1	6367	27		5210	11	23	44	2	
19	7	10	7		22	41	9	32	0	6340	43		5199	10	23	19	5	
29	7	25	3		22	9	9	36	8	6297	58		5189	11	22	54	7	
Aug. 8	7	39	8		21	33	1	40	9	6239	75		5178	11	22	29	8	
18	7	53	9		20	52	2	44	7	6164	90		5167	12	22	4	4	
28	8	7	6		20	7	5	47	7	6074	108		5155	11	21	38	7	
Sept. 7	8	20	8		19	19	8	50	0	5966	124		5144	12	21	12	5	
17	8	33	5		18	29	8	51	6	5842	141		5132	12	20	45	8	
27	8	45	5		17	38	2	52	1	5701	158		5120	12	20	18	4	
Oct. 7	8	56	7		16	46	1	51	4	5543	174		5108	12	19	50	1	
17	9	7	0		15	54	7	49	5	5369	190		5096	13	19	20	9	
27	9	16	2		15	5	2	46	4	5179	205		5083	12	18	50	7	
Nov. 6	9	24	2		14	18	8	41	7	4974	218		5071	13	18	19	3	
16	9	30	8		13	37	1	35	4	4756	227		5058	13	17	46	4	
26	9	35	8		13	1	7	27	6	4529	232		5045	13	17	11	9	
Dec. 6	9	38	9		12	34	1	18	5	4297	230		5032	13	16	35	5	
16	9	39	9		12	15	6			4067	218		5019	13	15	57	1	
26	9	38	8		12	7	4	+2	4	3849	198		5005	13	15	16	5	
					N.12	9	8	+2	4	3651	198		4992	13	14	33	7	

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
1853.	h	m	Δ ₁	°	'	Δ ₁		Δ ₁		Δ ₁	h	m	Δ ₁
Jan. 0	9	56.7	-3.7	N. 13	17.6	+38.1	0.2821	-210	0.4292	+2	15	13.7	-43.4
10	9	53.0	6.5	13	55.7	51.8	.2611	164	.4294	1	14	30.3	45.6
20	9	46.5	8.3	14	47.5	60.6	.2447	104	.4295	0	13	44.7	47.7
30	9	38.2	9.4	15	48.1	63.2	.2343	-35	.4295	-1	12	57.0	48.7
Feb. 9	9	28.8	9.5	16	51.3	59.1	.2308	+41	.4294	1	12	8.3	48.6
19	9	19.3	8.4	17	50.4	49.9	.2349	110	.4293	2	11	19.7	47.6
Mar. 1	9	10.9	6.4	18	40.3	36.8	.2459	166	.4291	3	10	32.1	45.4
11	9	4.5	3.7	19	17.1	22.7	.2625	208	.4288	3	9	46.7	43.1
21	9	0.8	1.1	19	39.8	+9.0	.2833	231	.4285	3	9	3.6	40.2
31	8	59.7	+1.7	19	48.8	-4.3	.3064	244	.4282	5	8	23.4	37.6
Apr. 10	9	1.4	4.2	19	44.5	15.5	.3308	244	.4277	5	7	45.8	35.2
20	9	5.6	6.3	19	29.0	26.0	.3552	238	.4272	5	7	10.6	32.9
30	9	11.9	8.1	19	3.0	35.8	.3790	227	.4267	7	6	37.7	31.2
May 10	9	20.0	9.7	18	27.2	44.6	.4017	214	.4260	7	6	6.5	29.7
20	9	29.7	10.8	17	42.6	52.6	.4231	198	.4253	7	5	36.8	28.5
30	9	40.5	12.0	16	50.0	60.1	.4429	182	.4246	8	5	8.3	27.4
June 9	9	52.5	12.7	15	49.9	67.1	.4611	164	.4238	9	4	40.9	26.6
19	10	5.2	13.4	14	42.8	73.4	.4775	148	.4229	9	4	14.3	26.0
29	10	18.6	14.0	13	29.4	79.3	.4923	131	.4220	10	3	48.3	25.5
July 9	10	32.6	14.4	12	10.1	84.4	.5054	115	.4210	11	3	22.8	24.9
19	10	47.0	14.8	10	45.7	89.0	.5169	98	.4199	11	2	57.9	24.6
29	11	1.8	15.1	9	16.7	93.0	.5267	83	.4188	12	2	33.3	24.3
Aug. 8	11	16.9	15.3	7	43.7	96.1	.5350	67	.4176	12	2	9.0	24.0
18	11	32.2	15.6	6	7.6	98.7	.5417	51	.4164	13	1	45.0	23.8
28	11	47.8	15.8	4	28.9	100.5	.5468	35	.4151	13	1	21.2	23.6
Sept. 7	12	3.6	16.0	2	48.4	101.6	.5503	21	.4138	14	0	57.6	23.4
17	12	19.6	16.3	N. 1	6.8	101.9	.5524	+5	.4124	14	0	34.2	23.2
27	12	35.9	16.4	S. 0	35.1	101.3	.5529	-10	.4110	15	0	11.0	25.1
Oct. 7	12	52.3	16.6	2	16.4	99.7	.5519	26	.4095	15	23	45.9	22.9
17	13	8.9	16.6	3	56.1	97.4	.5493	41	.4080	16	23	23.0	22.6
27	13	25.5	17.0	5	33.5	94.2	.5452	57	.4064	16	23	0.4	22.5
Nov. 6	13	42.5	16.9	7	7.7	90.2	.5395	73	.4048	17	22	37.9	22.4
16	13	59.4	17.1	8	37.9	85.4	.5322	90	.4031	17	22	15.5	22.3
26	14	16.5	17.1	10	3.3	79.7	.5232	107	.4014	17	21	53.2	22.2
Dec. 6	14	33.6	17.1	11	23.0	73.2	.5125	123	.3997	18	21	31.0	22.3
16	14	50.7	17.1	12	36.2	65.9	.5002	142	.3979	18	21	8.7	22.5
26	15	7.8	+16.8	13	42.1	-58.2	.4860	159	.3961	-18	20	46.2	-22.6
36	15	24.6		S. 14	40.3		0.4701		0.3943		20	23.6	

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
1853.	h	m	Δ ₁ m	°	'	Δ ₁ '	Δ ₁		Δ ₁		h	m	Δ ₁ m
Jan. 0	13	36.5	+13.2	S. 16	36.0	-78.3	0.4123	-258	0.3910	-41	18	54.1	-26.2
10	13	49.7	12.4	17	54.3	70.9	.3865	278	.3869	42	18	27.9	27.0
20	14	2.1	11.3	19	5.2	62.7	.3587	298	.3827	42	18	0.9	28.2
30	14	13.4	9.9	20	7.9	53.0	.3289	318	.3785	44	17	32.7	29.6
Feb. 9	14	23.3	8.2	21	0.9	41.7	.2971	334	.3741	45	17	3.1	31.3
19	14	31.5	6.0	21	42.6	28.7	.2637	346	.3696	46	16	31.8	33.3
Mar. 1	14	37.5	3.3	22	11.3	13.5	.2291	350	.3650	47	15	58.3	36.2
11	14	40.8	+0.5	22	24.8	+4.8	.1941	343	.3603	48	15	22.1	39.1
21	14	41.3	-2.6	22	20.0	25.8	.1598	322	.3555	48	14	43.0	42.0
31	14	38.7	5.4	21	54.2	48.4	.1276	280	.3507	50	14	1.0	44.9
Apr. 10	14	33.3	8.3	21	5.8	71.3	.0996	215	.3457	49	13	16.1	47.6
20	14	25.0	9.2	19	54.5	90.0	.0781	134	.3408	50	12	28.5	48.5
30	14	15.8	9.2	18	24.5	100.2	.0647	-43	.3358	51	11	40.0	48.4
May 10	14	6.6	7.7	16	44.3	99.3	.0604	+48	.3307	50	10	51.6	46.8
20	13	58.9	5.0	15	5.0	87.8	.0652	125	.3257	50	10	4.8	44.2
30	13	53.9	-1.9	13	37.2	68.8	.0777	182	.3207	50	9	20.6	41.1
June 9	13	52.0	+1.4	12	28.4	46.0	.0959	218	.3157	50	8	39.5	37.8
19	13	53.4	4.7	11	42.4	23.0	.1177	236	.3107	48	8	1.7	34.5
29	13	58.1	7.5	11	19.4	+2.7	.1413	244	.3059	48	7	27.2	31.7
July 9	14	5.6	10.2	11	16.7	-15.1	.1657	240	.3011	47	6	55.5	29.2
19	14	15.8	12.4	11	31.8	29.2	.1897	232	.2964	44	6	26.3	26.9
29	14	28.2	14.5	12	1.0	39.9	.2129	221	.2920	43	5	59.4	24.8
Aug. 8	14	42.7	16.3	12	40.9	46.9	.2350	209	.2877	41	5	34.6	23.1
18	14	59.0	17.8	13	27.8	50.8	.2559	195	.2836	38	5	11.5	21.6
28	15	16.8	19.3	14	18.6	51.6	.2754	182	.2798	36	4	49.9	20.1
Sept. 7	15	36.1	20.5	15	10.2	49.5	.2936	169	.2762	30	4	29.8	18.8
17	15	56.6	21.8	15	59.7	44.5	.3105	157	.2732	31	4	11.0	17.6
27	16	18.4	22.8	16	44.2	32.5	.3262	146	.2701	26	3	53.4	16.7
Oct. 7	16	41.2	23.7	17	21.7	27.8	.3408	135	.2675	21	3	36.7	15.6
17	17	4.9	24.6	17	49.5	16.1	.3543	127	.2654	17	3	21.1	14.8
27	17	29.5	25.1	18	5.6	-3.1	.3670	117	.2637	13	3	6.3	14.4
Nov. 6	17	54.6	25.6	18	8.7	+11.4	.3787	109	.2624	8	2	51.9	13.7
16	18	20.2	25.9	17	57.3	26.5	.3896	101	.2616	-4	2	38.2	13.5
26	18	46.1	26.0	17	30.8	42.0	.3997	94	.2612	+.	2	24.7	11.
Dec. 6	19	12.1	25.8	16	48.8	57.3	.4091	86	.2611				
16	19	38.1		15	51.5	71.9	.4177	80	.261				
26	20	3.9	+25.5	14	39.6	84.8	.4257						
36	20	29.4		S. 13	14.8	+84.8	.4331						

EPHEMERIS OF VICTORIA FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Date.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
1853. April	h m s	s	° ' "	"	"
12	14 31 10.49	- 1.89	S. 20 49 49.6	+ 16.4	6.9
13	14 30 24.61	1.94	20 43 7.4	17.0	7.0
14	14 29 37.52	1.99	20 36 12.1	17.6	7.0
15	14 28 49.27	2.03	20 29 3.8	18.1	7.0
16	14 27 59.93	2.08	20 21 42.8	18.6	7.0
17	14 27 9.56	2.12	20 14 9.5	19.1	7.1
18	14 26 18.25	2.16	20 6 24.0	19.6	7.1
19	14 25 26.05	2.19	19 58 26.7	20.1	7.1
20	14 24 33.05	2.22	19 50 18.1	20.6	7.2
21	14 23 39.31	2.25	19 41 58.3	21.1	7.2
22	14 22 44.93	2.28	19 33 27.8	21.5	7.2
23	14 21 49.96	2.30	19 24 47.1	21.9	7.3
24	14 20 54.48	2.32	19 15 56.5	22.3	7.3
25	14 19 58.61	2.34	19 6 56.6	22.7	7.3
26	14 19 2.40	2.35	18 57 47.9	23.0	7.3
27	14 18 5.93	2.36	18 48 30.7	23.4	7.3
28	14 17 9.31	2.36	18 39 5.7	23.7	7.3
29	14 16 12.63	2.36	18 29 33.6	24.0	7.4
30	14 15 15.96	2.36	18 19 54.6	24.3	7.4
May 1	14 14 19.38	2.35	18 10 9.5	24.5	7.4
2	14 13 23.00	2.34	18 0 19.1	24.7	7.4
3	14 12 26.90	2.33	17 50 23.8	24.9	7.4
4	14 11 31.18	2.31	17 40 24.5	25.1	7.4
5	14 10 35.92	2.29	17 30 21.8	25.2	7.4
6	14 9 41.19	2.27	17 20 16.3	25.3	7.5
7	14 8 47.11	2.24	17 10 8.9	25.3	7.5
8	14 7 53.77	2.21	17 0 0.3	25.4	7.5
9	14 7 1.27	2.17	16 49 51.0	25.4	7.5
10	14 6 9.66	2.13	16 39 41.9	25.4	7.5
11	14 5 19.00	2.09	16 29 33.8	25.3	7.5
12	14 4 29.36	2.05	16 19 27.2	25.2	7.5
13	14 3 40.84	2.00	16 9 23.0	25.1	7.5
14	14 2 53.51	- 1.95	S. 15 59 21.9	+ 25.0	

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
1853.	h	m	Δ_1 m	o	'	Δ_1 '		Δ_1		Δ_1	h	m	Δ_1 m
Jan. 0	16	33.4	+17.5	S. 25	45.9	-65.0	0.5423	-85	0.4275	+13	21	51.1	-21.9
10	16	50.9	17.3	26	50.9	59.4	.5338	101	.4288	12	21	29.2	22.1
20	17	8.2	17.0	27	50.3	54.5	.5237	119	.4300	12	21	7.1	22.4
30	17	25.2	16.4	28	44.8	50.4	.5118	137	.4312	11	20	44.7	23.1
Feb. 9	17	41.6	15.9	29	35.2	47.4	.4981	153	.4323	12	20	21.6	23.5
19	17	57.5	14.9	30	22.6	45.8	.4828	169	.4335	10	19	58.1	24.6
Mar. 1	18	12.4	14.0	31	8.4	45.8	.4659	184	.4345	11	19	33.5	25.3
11	18	26.4	12.8	31	54.2	47.5	.4475	200	.4356	10	19	8.0	26.7
21	18	39.2	11.2	32	41.7	51.1	.4275	211	.4366	9	18	41.3	28.3
31	18	50.4	9.5	33	32.8	56.4	.4064	222	.4375	9	18	13.0	30.0
Apr. 10	18	59.9	7.4	34	29.2	63.5	.3842	227	.4384	9	17	43.0	32.0
20	19	7.3	5.0	35	32.7	71.4	.3615	227	.4393	8	17	11.0	34.6
30	19	12.3	+2.2	36	44.1	79.1	.3388	219	.4401	8	16	36.4	37.3
May 10	19	14.5	-1.0	38	3.2	84.9	.3169	201	.4409	7	15	59.1	40.6
20	19	13.5	4.3	39	28.1	87.0	.2968	172	.4416	7	15	18.5	43.7
30	19	9.2	7.6	40	55.1	82.6	.2796	130	.4423	6	14	34.8	47.2
June 9	19	1.6	10.3	42	17.7	70.5	.2666	77	.4429	6	13	47.6	49.6
19	18	51.3	12.0	43	28.2	51.4	.2589	-18	.4435	5	12	58.0	51.3
29	18	39.3	12.4	44	19.6	27.8	.2571	+43	.4440	5	12	6.7	51.5
July 9	18	26.9	11.2	44	47.4	4.1	.2614	102	.4445	4	11	15.2	50.4
19	18	15.7	8.7	44	51.5	+16.2	.2716	149	.4449	4	10	24.8	47.8
29	18	7.0	5.6	44	35.3	30.6	.2865	187	.4453	4	9	37.0	44.7
Aug. 8	18	1.4	2.0	44	4.7	39.6	.3052	211	.4457	3	8	52.3	41.2
18	17	59.4	+1.3	43	25.1	44.1	.3263	225	.4460	3	8	11.1	38.0
28	18	0.7	4.5	42	41.0	45.5	.3488	230	.4462	2	7	33.1	34.7
Sept. 7	18	5.2	7.1	41	55.5	46.0	.3718	228	.4464	1	6	58.4	32.2
17	18	12.3	9.5	41	9.5	46.1	.3946	222	.4465	1	6	26.2	29.8
27	18	21.8	11.5	40	23.4	46.5	.4168	210	.4466	+1	5	56.4	27.9
Oct. 7	18	33.3	13.2	39	36.9	47.9	.4378	198	.4467	0	5	28.5	26.2
17	18	46.5	14.3	38	49.0	50.0	.4576	184	.4467	-1	5	2.3	25.0
27	19	0.8	15.5	37	59.0	53.1	.4760	169	.4466	1	4	37.3	24.0
Nov. 6	19	16.3	16.2	37	5.9	56.9	.4929	152	.4465	2	4	13.3	23.1
16	19	32.5	16.8	36	9.0	61.3	.5081	136	.4463	2	3	50.2	22.6
26	19	49.3	17.3	35	7.7	66.3	.5217	120	.4461	2	3	27.6	21
Dec. 6	20	6.6	17.6	34	1.4	71.1	.5337	103	.4459	2			
16	20	24.2	17.6	32	50.3	76.0	.5440	87	.4456				
26	20	41.8	+17.8	31	34.3	80.9	.5527	71					
36	20	59.6		S. 30	13.4		0.5598	+71					

EPHEMERIS OF EGERIA FOR THE OPPOSITION.

At Transit over the Meridian of Greenwich.

Date.	Apparent Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Apparent Declination.	Variation of Declination in 1 Hour of Long.	Hor. Par.
1853. me	h m s	s	° ' "	"	"
14	18 56 9.11	- 2.61	S.42 58 49.6	- 17.4	4.7
15	18 55 5.73	2.67	43 5 42.9	17.0	4.7
16	18 54 1.10	2.72	43 12 26.0	16.6	4.7
17	18 52 55.25	2.77	43 18 58.6	16.1	4.7
18	18 51 48.24	2.81	43 25 20.0	15.7	4.7
19	18 50 40.16	2.86	43 31 30.0	15.2	4.7
20	18 49 31.07	2.90	43 37 28.5	14.7	4.7
21	18 48 21.06	2.94	43 43 14.8	14.2	4.7
22	18 47 10.19	2.97	43 48 48.8	13.7	4.7
23	18 45 58.56	3.00	43 54 10.4	13.2	4.7
24	18 44 46.23	3.03	43 59 18.9	12.6	4.7
25	18 43 33.32	3.05	44 4 13.9	12.0	4.7
26	18 42 19.86	3.07	44 8 55.3	11.4	4.8
27	18 41 5.95	3.09	44 13 22.7	10.9	4.8
28	18 39 51.72	3.10	44 17 36.1	10.3	4.7
♂	18 38 37.21	3.11	44 21 35.2	9.7	4.7
30	18 37 22.55	3.11	44 25 20.0	9.1	4.7
ly	18 36 7.80	3.11	44 28 50.9	8.5	4.7
2	18 34 53.09	3.11	44 32 7.4	7.9	4.7
3	18 33 38.49	3.10	44 35 8.5	7.3	4.7
4	18 32 24.09	3.09	44 37 55.2	6.7	4.7
5	18 31 10.01	3.08	44 40 27.3	6.0	4.7
6	18 29 56.35	3.06	44 42 44.0	5.4	4.7
7	18 28 43.17	3.04	44 44 46.8	4.8	4.7
8	18 27 30.60	3.01	44 46 35.0	4.2	4.7
9	18 26 18.72	2.98	44 48 8.4	3.6	4.7
10	18 25 7.61	2.95	44 49 27.4	3.0	4.7
11	18 23 57.36	2.91	44 50 32.6	2.4	4.7
12	18 22 48.07	2.87	44 51 23.4	1.8	4.7
13	18 21 39.78	- 2.82	S.44 52 1.0	- 1.3	4.7

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
1853.	h	m	Δ_1 m	o	'	Δ_1 '	Δ_1 '		Δ_1 '		h	m	Δ_1 m
Jan. 0	23	19.7	+10.3	S. 13	23.1	+87.4	0.5168	+162	0.4798	-3	4	38.9	-29.0
10	23	30.0	11.1	11	55.7	90.7	.5330	145	.4795	3	4	9.9	28.4
20	23	41.1	11.6	10	25.0	93.4	.5475	126	.4792	4	3	41.5	27.6
30	23	52.7	12.3	8	51.6	95.2	.5601	108	.4788	5	3	13.9	27.2
Feb. 9	0	5.0	12.6	7	16.4	96.1	.5709	90	.4783	5	2	46.7	26.7
19	0	17.6	13.0	5	40.3	96.4	.5799	73	.4778	7	2	20.0	26.4
Mar. 1	0	30.6	13.3	4	3.9	96.0	.5872	55	.4771	7	1	53.6	26.1
11	0	43.9	13.5	2	27.9	95.1	.5927	38	.4764	7	1	27.5	25.8
21	0	57.4	13.7	S. 0	52.8	93.5	.5965	22	.4757	9	1	1.7	25.7
31	1	11.1	13.9	N. 0	40.7	91.4	.5987	+4	.4748	9	0	36.0	25.5
Apr. 10	1	25.0	14.0	2	12.1	88.5	.5991	-14	.4739	10	0	10.5	28.0
20	1	39.0	14.1	3	40.6	85.1	.5977	27	.4729	10	23	42.5	25.2
30	1	53.1	14.1	5	5.7	81.3	.5950	46	.4718	12	23	17.3	25.1
May 10	2	7.2	14.2	6	27.0	76.9	.5904	61	.4706	12	22	52.2	25.4
20	2	21.4	14.0	7	43.9	72.1	.5843	79	.4694	14	22	26.8	25.3
30	2	35.4	14.0	8	56.0	66.8	.5764	94	.4680	14	22	1.5	25.4
June 9	2	49.4	13.9	10	2.8	61.1	.5670	112	.4667	13	21	36.1	25.6
19	3	3.3	13.5	11	3.9	55.3	.5558	128	.4652	15	21	10.5	25.8
29	3	16.8	13.2	11	59.2	49.2	.5430	146	.4636	16	20	44.7	26.2
July 9	3	30.0	12.8	12	48.4	43.0	.5284	163	.4620	16	20	18.5	26.7
19	3	42.8	12.2	13	31.4	36.4	.5121	181	.4603	17	19	51.8	27.2
29	3	55.0	11.4	14	7.8	30.2	.4940	198	.4585	18	19	24.6	28.1
Aug. 8	4	6.4	10.4	14	38.0	24.2	.4742	215	.4566	19	18	56.5	29.0
18	4	16.8	9.3	15	2.2	18.6	.4527	231	.4547	19	18	27.5	30.2
28	4	26.1	7.8	15	20.8	13.1	.4296	246	.4527	20	17	57.3	31.7
Sept. 7	4	33.9	6.0	15	33.9	8.6	.4050	258	.4506	21	17	25.6	33.4
17	4	39.9	4.0	15	42.5	4.6	.3792	267	.4484	22	16	52.2	35.5
27	4	43.9	+1.6	15	47.1	+1.5	.3525	265	.4462	22	16	16.7	37.9
Oct. 7	4	45.5	-1.0	15	48.6	-0.7	.3250	258	.4439	23	15	38.8	40.6
17	4	44.5	3.9	15	47.9	2.0	.3002	234	.4415	24	14	58.2	43.3
27	4	40.6	6.5	15	45.9	2.5	.2768	199	.4390	25	14	14.9	46.0
Nov. 6	4	34.1	8.7	15	43.4	-1.6	.2569	145	.4365	25	13	28.9	48.0
16	4	25.4	10.2	15	41.8	+0.2	.2424	78	.4339	26	12	40.9	49.5
26	4	15.2	10.5	15	42.0	3.9	.2346	-5	.4313	27	11	51.4	49.7
Dec. 6	4	4.7	9.5	15	45.9	9.3	.2341	+67	.4286	27	11	1.7	48.6
16	3	55.2	7.7	15	55.2	15.8	.2408	129	.4258	28	10	13.1	46.9
26	3	47.5	-5.1	16	11.0	+24.0	.2537	+175	.4230	-29	9	26.2	-44.0
36	3	42.4		N. 16	35.0		0.2712		0.4201		8	42.2	

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
1853.	h	m	Δ _r	o	i	Δ _r		Δ _r		Δ _r	h	m	Δ _r
Jan. 0	4	30.4	3.7	N. 32	2.4	88.8	0.1447	+256	0.3610	+31	9	48.3	42.8
10	4	26.7	0.1	30	33.6	78.9	.1703	294	.3641	33	9	5.5	39.3
20	4	26.6		29	14.7	66.5	.1997	313	.3674	32	8	26.2	35.9
30	4	29.9	+3.3	28	8.2	53.9	.2310	318	.3706	34	7	50.3	33.1
Feb. 9	4	36.1	8.7	27	14.3	42.9	.2628	313	.3740	34	7	17.2	30.6
19	4	44.8	10.8	26	31.4	34.7	.2941	303	.3774	35	6	46.6	28.5
Mar. 1	4	55.6	12.4	25	56.7	29.0	.3244	287	.3809	34	6	18.1	26.9
11	5	8.0	13.8	25	27.7	26.1	.3531	270	.3843	35	5	51.2	25.6
21	5	21.8	14.9	25	1.6	25.3	.3801	252	.3878	35	5	25.6	24.5
31	5	36.7	15.6	24	36.3	26.6	.4053	233	.3913	35	5	1.1	23.7
Apr. 10	5	52.3	16.3	24	9.7	29.3	.4286	213	.3948	35	4	37.4	23.1
20	6	8.6	16.7	23	40.4	33.3	.4499	196	.3983	35	4	14.3	22.8
30	6	25.3	17.0	23	7.1	38.2	.4695	177	.4018	35	3	51.5	22.3
May 10	6	42.3	17.3	22	28.9	43.5	.4872	159	.4053	34	3	29.2	22.1
20	6	59.6	17.3	21	45.4	49.8	.5031	143	.4087	34	3	7.1	22.1
30	7	16.9	17.2	20	55.6	55.8	.5174	126	.4121	34	2	45.0	22.3
June 9	7	34.1	17.2	19	59.8	61.8	.5300	109	.4155	33	2	22.7	22.1
19	7	51.3	17.0	18	58.0	68.0	.5409	94	.4188	33	2	0.6	22.3
29	8	8.3	16.8	17	50.0	73.6	.5503	76	.4221	32	1	38.3	22.6
July 9	8	25.1	16.6	16	36.4	79.1	.5579	62	.4253	32	1	15.7	22.9
19	8	41.7	16.3	15	17.3	84.0	.5641	47	.4285	31	0	52.8	23.0
29	8	58.0	15.9	13	53.3	88.7	.5688	31	.4316	31	0	29.8	23.5
Aug. 8	9	13.9	15.6	12	24.6	92.9	.5719	+15	.4347	30	10	6.3	26.2
18	9	29.5	15.3	10	51.7	95.2	.5734	0	.4377	29	23	40.1	24.2
28	9	44.8	14.8	9	15.5	99.3	.5734	-16	.4406	29	23	15.9	24.6
Sept. 7	9	59.6	14.4	7	36.2	101.7	.5718	33	.4435	28	22	51.3	25.0
17	10	14.0	14.0	5	54.5	103.4	.5635	48	.4463	27	22	26.3	25.4
27	10	28.0	13.4	4	11.1	104.6	.5637	66	.4490	27	22	0.9	26.1
Oct. 7	10	41.4	12.9	2	26.5	104.9	.5571	82	.4517	26	21	34.8	26.5
17	10	54.3	12.3	N. 0	41.6	104.8	.5489	100	.4543	25	21	8.3	27.1
27	11	6.6	11.5	S. 1	3.2	103.8	.5389	117	.4568	24	20	41.2	28.1
Nov. 6	11	18.1	10.8	2	47.0	102.0	.5272	134	.4592	24	20	13.1	28.6
16	11	28.9	9.8	4	29.0	99.5	.5138	151	.4616	23	19	44.5	29.6
26	11	38.7	8.7	6	8.5	95.8	.4987	168	.4639	22	19	14.9	30.7
Dec. 6	11	47.4	7.4	7	44.3	91.2	.4819	183	.4661	21	18	44.2	32.2
16	11	54.8	5.9	9	15.5	85.3	.4636	195	.4682	21	18	12.0	33.5
26	12	0.7	4.1	10	40.8	77.8	.4441	205	.4703	+20	17	38.5	35.3
36	12	4.8		S. 11	58.6		.4236		.4723		17	3.2	

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.			
							Earth.	Sun.				
	Noon.			Noon.			Noon.	Noon.				
1853.	h	m	Δ_1	o	'	Δ_2	Δ_1	Δ_2	h	m	Δ_3	
Jan. 0	14	18.1	+ 9.6	S. 11	32.8	- 39.9	0.5591	- 171	0.5199	- 3	19 35.4	- 29.8
10	14	27.7	8.7	12	12.7	32.5	.5420	187	.5196	3	19 5.6	30.3
20	14	36.4	7.4	12	45.2	24.6	.5233	200	.5193	5	18 34.8	32.0
30	14	43.8	6.0	13	9.8	16.3	.5033	210	.5188	4	18 2.8	33.5
Feb. 9	14	49.8	4.3	13	26.1	- 7.3	.4823	218	.5184	5	17 29.3	35.2
19	14	54.1	2.5	13	33.4	+ 1.7	.4605	219	.5179	5	16 54.1	37.0
Mar. 1	14	56.6	+ 0.4	13	31.7	11.2	.4386	214	.5174	6	16 17.1	39.0
11	14	57.0	- 1.7	13	20.5	20.2	.4172	199	.5168	6	15 38.1	41.1
21	14	55.3	3.8	13	0.3	29.1	.3973	174	.5162	7	14 57.0	43.3
31	14	51.5	5.6	12	31.2	35.6	.3799	138	.5155	7	14 13.7	44.9
Apr. 10	14	45.9	7.0	11	55.6	40.8	.3661	91	.5148	7	13 28.8	46.3
20	14	38.9	7.8	11	14.8	42.0	.3570	- 40	.5141	8	12 42.5	47.1
30	14	31.1	7.7	10	32.8	39.7	.3530	+ 17	.5133	9	11 55.4	46.9
May 10	14	23.4	7.1	9	53.1	34.1	.3547	70	.5124	9	11 8.5	46.4
20	14	16.3	5.8	9	19.0	24.5	.3617	115	.5115	9	10 22.1	44.9
30	14	10.5	3.9	8	54.5	14.3	.3732	152	.5106	10	9 37.2	43.2
June 9	14	6.6	- 2.1	8	40.2	+ 1.9	.3884	176	.5096	10	8 54.0	41.1
19	14	4.5	0.0	8	38.3	- 9.2	.4060	191	.5086	10	8 12.9	39.5
29	14	4.5	+ 1.9	8	47.5	20.1	.4251	198	.5076	12	7 33.4	37.3
July 9	14	6.4	3.8	9	7.6	29.3	.4449	197	.5064	11	6 56.1	35.6
19	14	10.2	5.5	9	36.9	37.2	.4646	191	.5053	12	6 20.5	33.9
29	14	15.7	6.8	10	14.1	43.6	.4837	183	.5041	12	5 46.6	32.4
Aug. 8	14	22.5	8.3	10	57.7	48.6	.5020	171	.5029	13	5 14.2	31.0
18	14	30.8	9.5	11	46.3	52.2	.5191	158	.5016	13	4 43.2	29.9
28	14	40.3	10.5	12	38.5	54.4	.5349	143	.5003	14	4 13.3	28.9
Sept. 7	14	50.8	11.5	13	32.9	55.4	.5492	128	.4989	14	3 44.4	27.8
17	15	2.3	12.3	14	28.3	55.3	.5620	112	.4975	14	3 16.6	27.1
27	15	14.6	13.1	15	23.6	54.2	.5732	97	.4961	15	2 49.5	26.2
Oct. 7	15	27.7	13.9	16	17.8	52.0	.5829	80	.4946	15	2 23.3	25.6
17	15	41.6	14.4	17	9.8	48.9	.5909	64	.4931	15	1 57.7	24.9
27	15	56.0	15.0	17	58.7	44.9	.5973	47	.4916	16	1 32.8	24.4
Nov. 6	16	11.0	15.4	18	43.6	40.3	.6020	31	.4900	16	1 8.4	23.9
16	16	26.4	15.8	19	23.9	34.8	.6051	+ 14	.4884	17	0 44.5	
26	16	42.2	16.2	19	58.7	28.8	.6065	- 3	.4867	17	0 21.1	
Dec. 6	16	58.4	16.3	20	27.5	22.3	.6062	19	.4850	17	23	
16	17	14.7	16.5	20	49.8	15.7	.6043	36	.4833	17	23	
26	17	31.2	+ 16.5	21	5.5	- 8.6	.6007	- 53	.4816	17		
36	17	47.7		S. 21	14.1		0.5954		0.4798			

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the		Meridian Passage.			
							Earth.	Sun.				
	Noon.			Noon.			Noon.	Noon.				
1853.	h	m	Δ _r	°	'	Δ _r	Δ _r	Δ _r	h	m	Δ _r	
Jan. 0	18	18.3	+23.3	S. 21	14.5	+6.4	0.4963	-18	0.3345	+7	23 36.5	-16.1
10	18	41.6	23.1	21	8.1	18.9	.4945	30	.3352	9	23 20.4	16.4
20	19	4.7	22.7	20	49.2	30.8	.4915	42	.3361	10	23 4.0	16.7
30	19	27.4	22.3	20	18.4	41.7	.4873	54	.3371	12	22 47.3	17.2
Feb. 9	19	49.7	21.8	19	36.7	51.2	.4819	67	.3383	13	22 30.1	17.7
19	20	11.5	21.2	18	45.5	59.5	.4752	80	.3396	14	22 12.4	18.2
Mar. 1	20	32.7	20.5	17	46.0	66.3	.4672	92	.3410	16	21 54.2	19.0
11	20	53.2	19.8	16	39.7	71.4	.4580	106	.3426	17	21 35.2	19.6
21	21	13.0	19.1	15	28.3	74.8	.4474	120	.3443	18	21 15.6	20.5
31	21	32.1	18.1	14	13.5	76.5	.4354	133	.3461	19	20 55.1	21.3
Apr. 10	21	50.2	17.3	12	57.0	76.5	.4221	148	.3480	20	20 33.8	22.1
20	22	7.5	16.4	11	40.5	74.5	.4073	162	.3500	21	20 11.7	23.1
30	22	23.9	15.4	10	26.0	70.8	.3911	178	.3521	22	19 48.6	24.1
May 10	22	39.3	14.2	9	15.2	65.1	.3733	191	.3543	23	19 24.5	25.3
20	22	53.5	13.0	8	10.1	57.4	.3542	206	.3566	23	18 59.2	26.4
30	23	6.5	11.6	7	12.7	47.6	.3336	219	.3589	24	18 32.8	28.0
June 9	23	18.1	9.9	6	25.1	35.6	.3117	231	.3613	24	18 4.8	29.5
19	23	28.0	8.1	5	49.5	21.3	.2886	239	.3637	25	17 35.3	31.4
29	23	36.1	5.9	5	28.2	+5.0	.2647	242	.3662	25	17 3.9	33.7
July 9	23	42.0	3.5	5	23.2	-13.2	.2405	237	.3687	26	16 30.2	36.0
19	23	45.5	+0.8	5	36.4	32.2	.2168	222	.3713	26	15 54.2	38.7
29	23	46.3	-2.0	6	8.6	50.6	.1946	191	.3739	25	15 15.5	41.4
Aug. 8	23	44.3	4.6	6	59.2	66.3	.1755	145	.3764	26	14 34.1	44.1
18	23	39.7	6.8	8	5.5	75.7	.1610	82	.3790	26	13 50.0	46.1
28	23	32.9	8.2	9	21.2	77.7	.1528	-6	.3816	26	13 3.9	47.6
Sept. 7	23	24.7	8.6	10	38.9	70.6	.1522	+73	.3842	26	12 16.3	47.8
17	23	16.1	7.8	11	49.5	55.5	.1595	149	.3868	25	11 28.5	46.9
27	23	8.3	6.0	12	45.0	36.4	.1744	210	.3893	26	10 41.6	45.3
Oct. 7	23	2.3	3.6	13	21.4	-15.2	.1954	254	.3919	25	9 56.3	42.8
17	22	58.7	-1.0	13	36.6	+5.2	.2208	285	.3944	25	9 13.5	40.2
27	22	57.7	+1.7	13	31.4	23.3	.2493	296	.3969	24	8 33.3	37.5
Nov. 6	22	59.4	4.0	13	8.1	39.2	.2789	298	.3993	25	7 55.8	35.3
16	23	3.4	6.1	12	28.9	52.3	.3087	292	.4018	23	7 20.5	33.2
26	23	9.5	8.0	11	36.6	63.4	.3379	280	.4041	24	6 47.3	31.3
Dec. 6	23	17.5	9.4	10	33.2	72.6	.3659	264	.4065	23	6 16.0	29.9
16	23	26.9	10.7	9	20.6	80.1	.3923	248	.4088	22	5 46.1	28.7
26	23	37.6	+11.6	8	0.5	+86.2	.4171	+228	.4110	+22	5 17.4	27.1
36	23	49.2		S. 6	34.3		0.4399		0.4132		4 49.7	

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
1853.	h	m	Δ_1	°	'	Δ_1	Δ_1		Δ_1		h	m	Δ_1
Jan. 0	21	27.5	+23.9	S. 16	10.5	+ 87.4	0.4016	+ 83	0.2703	-33	2	47.0	-15.5
10	21	51.4	24.0	14	43.1	99.1	.4099	72	.2670	30	2	31.5	15.3
20	22	15.4	24.0	13	4.0	109.5	.4171	63	.2640	26	2	16.2	15.4
30	22	39.4	24.1	11	14.5	117.8	.4234	55	.2614	23	2	0.8	15.4
Feb. 9	23	3.5	24.0	9	16.7	124.4	.4289	47	.2591	18	1	45.4	15.4
19	23	27.5	24.1	7	12.3	129.2	.4336	38	.2573	13	1	30.0	15.3
Mar. 1	23	51.6	24.0	5	3.1	131.5	.4374	32	.2560	9	1	14.7	15.4
11	0	15.6	24.1	2	51.6	132.7	.4406	27	.2551	-3	0	59.3	15.3
21	0	39.7	24.1	S. 0	38.9	130.8	.4433	20	.2548	+ 1	0	44.0	15.3
31	1	3.8	24.2	N. 1	31.9	127.5	.4453	13	.2549	5	0	28.7	15.2
Apr. 10	1	28.0	24.3	3	39.4	122.0	.4466	9	.2554	11	23	13.5	16.6
20	1	52.3	24.4	5	41.4	114.9	.4475	+ 3	.2565	15	23	56.9	15.1
30	2	16.7	24.6	7	36.3	106.0	.4478	- 3	.2580	19	23	41.8	14.9
May 10	2	41.3	24.5	9	22.3	95.8	.4475	8	.2599	23	23	26.9	14.7
20	3	5.8	24.6	10	58.1	84.1	.4467	14	.2622	28	23	12.2	14.8
30	3	30.4	24.5	12	22.2	71.4	.4453	21	.2650	31	22	57.4	15.0
June 9	3	54.9	24.4	13	33.6	58.0	.4432	28	.2681	34	22	42.4	15.0
19	4	19.3	24.3	14	31.6	44.2	.4404	36	.2715	38	22	27.4	15.1
29	4	43.6	23.9	15	15.8	30.2	.4368	44	.2753	40	22	12.3	15.5
July 9	5	7.5	23.5	15	46.0	16.3	.4324	54	.2793	43	21	56.8	16.1
19	5	31.0	23.0	16	2.3	+ 3.2	.4270	64	.2836	44	21	40.7	16.4
29	5	54.0	22.4	16	5.5	- 9.6	.4206	75	.2880	47	21	24.3	17.0
Aug. 8	6	16.4	21.6	15	55.9	20.8	.4131	87	.2927	48	20	7.3	17.9
18	6	38.0	20.7	15	35.1	31.2	.4044	101	.2975	50	20	49.4	18.9
28	6	58.7	19.7	15	3.9	39.7	.3943	116	.3025	50	20	30.5	19.8
Sept. 7	7	18.4	18.6	14	24.2	46.8	.3827	130	.3075	50	20	10.7	20.9
17	7	37.0	17.3	13	37.4	51.7	.3697	147	.3125	51	19	49.8	21.1
27	7	54.3	15.9	12	45.7	54.6	.3550	164	.3176	51	19	27.7	23.7
Oct. 7	8	10.2	14.5	11	51.1	55.2	.3386	180	.3227	51	19	4.0	25.0
17	8	24.7	12.6	10	55.9	53.2	.3206	200	.3278	51	18	39.0	27.0
27	8	37.3	10.6	10	2.7	48.5	.3006	214	.3329	51	18	12.0	29.0
Nov. 6	8	47.9	8.2	9	14.2	40.3	.2792	227	.3380	50	17	43.0	31.4
16	8	56.1	5.8	8	33.9	28.8	.2565	236	.3430				
26	9	1.9	+ 2.8	8	5.1	- 13.8	.2329	237	.3479				
Dec. 6	9	4.7	- 0.3	7	51.3	+ 5.0	.2092	224	.3527				
16	9	4.4	3.5	7	56.3	26.0	.1868	197	.3574				
26	9	0.9	- 6.6	8	22.3	+ 47.5	.1671	-146	..				
36	8	54.3		N. 9	9.8		0.1525						

MEAN TIME AT GREENWICH.

Date.	Right Ascension.			Declination.			Log. of Distance from the				Meridian Passage.		
							Earth.		Sun.				
	Noon.			Noon.			Noon.		Noon.				
1853.	h	m	Δ ₁ m	°	'	Δ ₁ '	Δ ₁	Δ ₁	Δ ₁	Δ ₁	h	m	Δ ₁ m
Jan. 0	23	23.8	+17.4	S. 3	31.1	+105.4	0.3349	+197	0.3118	-9	4	43.1	-22.0
10	23	41.2	18.1	S. 1	45.7	111.4	.3546	182	.3109	7	4	21.1	21.3
20	23	59.3	18.7	N. 0	5.7	115.8	.3728	167	.3102	4	3	59.8	20.6
30	0	18.0	19.2	2	1.5	118.9	.3895	153	.3098	-2	3	39.2	20.2
Feb. 9	0	37.2	19.8	4	0.4	119.8	.4048	139	.3096	+1	3	19.0	19.6
19	0	57.0	20.2	6	0.2	119.3	.4187	127	.3097	3	2	59.4	19.2
Mar. 1	1	17.2	20.6	7	59.5	117.2	.4314	114	.3100	6	2	40.2	18.8
11	1	37.8	21.1	9	56.7	113.4	.4428	103	.3106	9	2	21.4	18.3
21	1	58.9	21.4	11	50.1	107.9	.4531	90	.3115	11	2	3.1	18.0
31	2	20.3	21.8	13	38.0	101.1	.4621	81	.3126	13	1	45.1	17.6
Apr. 10	2	42.1	22.1	15	19.1	93.1	.4702	69	.3139	15	1	27.5	17.3
20	3	4.2	22.5	16	52.2	83.9	.4771	58	.3154	18	1	10.2	16.9
30	3	26.7	22.8	18	16.1	73.5	.4829	49	.3172	20	0	53.3	16.7
May 10	3	49.5	22.9	19	29.6	62.1	.4878	38	.3192	22	0	36.6	16.4
20	4	12.4	23.1	20	31.7	50.1	.4916	27	.3214	23	0	20.2	16.3
30	4	35.5	23.1	21	21.8	37.5	.4943	17	.3237	25	0	3.9	18.0
June 9	4	58.6	23.0	21	59.3	24.8	.4960	+7	.3262	27	23	45.9	16.4
19	5	21.6	22.9	22	24.1	12.1	.4967	-5	.3289	28	23	29.5	16.5
29	5	44.5	22.7	22	36.2	0.5	.4962	15	.3317	30	23	13.0	16.8
July 9	6	7.2	22.3	22	35.7	12.7	.4947	27	.3347	31	22	56.2	17.1
19	6	29.5	21.8	22	23.0	24.1	.4920	39	.3378	31	22	39.1	17.6
29	6	51.3	21.3	21	58.9	34.6	.4881	51	.3409	33	22	21.5	18.2
Aug. 8	7	12.6	20.6	21	24.3	44.1	.4830	65	.3442	33	22	3.3	18.9
18	7	33.2	19.9	20	40.2	52.4	.4765	78	.3475	33	21	44.4	19.5
28	7	53.1	19.1	19	47.8	59.4	.4687	93	.3509	34	21	24.9	20.4
Sept. 7	8	12.2	18.3	18	48.4	64.9	.4594	108	.3543	34	21	4.5	21.2
17	8	30.5	17.2	17	43.5	68.9	.4486	124	.3577	35	20	43.3	22.3
27	8	47.7	16.2	16	34.6	71.3	.4362	140	.3612	35	20	21.0	23.3
Oct. 7	9	3.9	15.1	15	23.3	72.0	.4222	158	.3647	35	19	57.7	24.4
17	9	19.0	13.7	14	11.3	70.7	.4064	174	.3682	35	19	33.3	25.7
27	9	32.7	12.4	13	0.6	67.1	.3890	193	.3717	35	19	7.6	27.2
Nov. 6	9	45.1	10.7	11	53.5	61.6	.3697	207	.3752	34	18	40.4	28.8
16	9	55.8	8.8	10	51.9	54.0	.3490	222	.3786	35	18	11.6	30.7
26	10	4.6	6.7	9	57.9	43.9	.3268	232	.3821	34	17	40.9	32.8
10	11.3	4.3	5.6	9	14.0	31.2	.3036	237	.3855	34	17	8.1	35.3
			+1.6	8	42.8	16.1	.2799	234	.3889	32	16	32.8	37.9
				8	26.7	0.9	.2565	217	.3921	+12	15	54.9	40.8
				27.6			.2348		.3953		15	14.1	

MEAN TIME AT GREENWICH.

Date.	Apparent Right Ascension.				Apparent Declination.				Log. of True Dist. from the Earth.				Meridian Passage.			
	Noon.				Noon.				Noon.				Passage.			
	h	m	s	Δ_1	S.	°	'	"	Δ_1		Δ_1	h	m	s	Δ_1	
1853.																
Jan. 0	22	44	29.05	+26.82	S.	8	57	31.4	+167.0	1.483420	+1033	4	3	6	-19.2	
5	22	44	55.87	29.33		8	54	44.4	181.7	.484453	970	3	44	4	19.1	
10	22	45	25.20	31.65		8	51	42.7	195.1	.485423	899	3	25	3	19.1	
15	22	45	56.85	33.75		8	48	27.6	207.5	.486322	823	3	6	0	19.1	
20	22	46	30.60	35.68		8	45	0.1	218.7	.487145	740	2	47	2	19.1	
25	22	47	6.28	37.36		8	41	21.4	228.5	.487885	654	2	08	0	19.0	
30	22	47	43.64	38.84		8	37	32.9	237.2	.488539	562	2	9	0	19.1	
Feb. 4	22	48	22.48	40.07		8	33	35.7	244.2	.489101	470	1	49	9	19.0	
9	22	49	2.55	41.09		8	29	31.5	249.8	.489571	372	1	30	9	19.0	
14	22	49	43.64	41.84		8	25	21.7	253.9	.489943	275	1	11	9	19.0	
19	22	50	25.48	42.34		8	21	7.8	256.6	.490218	173	0	52	9	19.0	
24	22	51	7.82	42.58		8	16	51.2	257.7	.490391	74	0	33	9	18.9	
Mar. 1	22	51	50.40	42.64		8	12	33.5	257.5	.490465	28	0	15	0	21.8	
6	22	52	33.04	42.41		8	8	16.0	255.7	.490437	128	23	52	2	18.9	
11	22	53	15.45	41.94		8	4	0.3	252.4	.490309	228	23	33	3	19.0	
16	22	53	57.39	41.26		7	59	47.9	247.7	.490081	325	23	14	3	19.0	
21	22	54	38.65	40.35		7	55	40.2	241.6	.489756	420	22	55	3	18.8	
26	22	55	19.00	39.22		7	51	38.6	234.0	.489336	512	22	36	4	19.0	
31	22	55	58.22	37.87		7	47	44.6	225.4	.488824	601	22	17	4	19.0	
Apr. 5	22	56	36.09	36.31		7	43	59.2	215.4	.488223	685	21	58	4	19.1	
10	22	57	12.40	34.55		7	40	23.8	204.0	.487538	766	21	39	3	19.1	
15	22	57	46.95	32.61		7	36	59.8	191.6	.486772	841	21	20	2	19.1	
20	22	58	19.56	30.48		7	33	48.2	178.0	.485931	911	21	1	1	19.2	
25	22	58	50.04	28.23		7	30	50.2	163.6	.485020	974	20	41	9	19.2	
30	22	59	18.27	25.81		7	28	6.6	148.4	.484046	1029	20	22	7	19.3	
May 5	22	59	44.08	23.28		7	25	38.2	132.3	.483017	1080	20	3	4	19.3	
10	23	0	7.36	20.61		7	23	25.9	115.4	.481937	1124	19	44	1	19.3	
15	23	0	27.97	17.83		7	21	30.5	97.6	.480813	1160	19	24	8	19.4	
20	23	0	45.80	14.88		7	19	52.9	79.4	.479653	1188	19	5	4	19.4	
25	23	1	0.68	11.94		7	18	33.5	61.3	.478465	1208	18	46	0	19.5	
30	23	1	12.62	8.92		7	17	32.2	42.5	.477257	1221	18	26	5	19.5	
June 4	23	1	21.54	5.93		7	16	49.7	23.7	.476036	1223	18	7	0	19.5	
9	23	1	27.47	2.94		7	16	26.0	4.8	.474813	1218	17	47	5	19.6	
14	23	1	30.41	0.06		7	16	21.2	14.0	.473595	1204	17	27	9	19.7	
19	23	1	30.35	3.11		7	16	35.2	32.7	.472391	1178	17	8	2	19.7	
24	23	1	27.24	6.05		7	17	7.9	50.7	.471213	1153	16	48	5	19.8	
29	23	1	21.19	8.95		7	17	58.6	68.5	.470060	1112	16	28	7	19.8	
July 4	23	1	12.24		S.	7	19	7.1		1.468948		16	8	9	19.8	

NEPTUNE.

MEAN TIME AT GREENWICH.

Date.	Apparent Right Ascension.				Apparent Declination.				Log. of True Dist. from the Earth.		Meridian Passage.		
	Noon.				Noon.				Noon.		Passage.		
	h	m	s	Δ_1	o	'	"	Δ_1		Δ_1	h	m	Δ_1
1853.													
July 4	23	1	12.24	-11.73	S. 7	19	7.1	-85.2	1.468948	-1065	16	8.9	-19.9
9	23	1	0.51	14.46	7	20	32.3	101.6	.467883	1006	15	49.0	19.9
14	23	0	46.05	16.98	7	22	13.9	116.7	.466877	942	15	29.1	19.9
19	23	0	29.07	19.39	7	24	10.6	130.8	.465935	870	15	9.2	20.0
24	23	0	9.68	21.56	7	26	21.4	143.7	.465065	793	14	49.2	20.0
29	22	59	48.12	23.60	7	28	45.1	155.5	.464272	707	14	29.2	20.1
Aug. 3	22	59	24.52	25.38	7	31	20.6	165.7	.463565	616	14	9.1	20.1
8	22	58	59.14	26.98	7	34	6.3	174.4	.462949	517	13	49.0	20.1
13	22	58	32.16	28.25	7	37	0.7	181.3	.462432	417	13	28.9	20.1
18	22	58	3.91	29.28	7	40	2.0	186.8	.462015	312	13	8.8	20.1
23	22	57	34.63	30.03	7	43	8.8	190.4	.461703	205	12	48.7	20.2
28	22	57	4.60	30.52	7	46	19.2	192.3	.461498	93	12	28.5	20.1
Sept. 2	22	56	34.08	30.70	7	49	31.5	192.4	.461405	+ 18	12	8.4	20.2
7	22	56	3.38	30.61	7	52	43.9	190.5	.461423	129	11	48.2	20.1
12	22	55	32.77	30.19	7	55	54.4	186.8	.461552	239	11	28.1	20.2
17	22	55	2.58	29.50	8	59	1.2	181.3	.461791	348	11	7.9	20.1
22	22	54	33.08	28.50	8	2	2.5	174.1	.462139	455	10	47.8	20.2
27	22	54	4.58	27.23	8	4	56.6	165.2	.462594	560	10	27.6	20.1
Oct. 2	22	53	37.35	25.67	8	7	41.8	154.8	.463154	659	10	7.5	20.1
7	22	53	11.68	23.84	8	10	16.6	142.4	.463813	754	9	47.4	20.1
12	22	52	47.84	21.79	8	12	39.0	129.1	.464567	839	9	27.3	20.0
17	22	52	26.05	19.51	8	14	48.1	114.4	.465406	918	9	7.3	20.0
22	22	52	6.54	17.04	8	16	42.5	98.6	.466324	992	8	47.3	19.9
27	22	51	49.50	14.35	8	18	21.1	81.5	.467316	1058	8	27.4	19.9
Nov. 1	22	51	35.15	11.54	8	19	42.6	63.8	.468374	1115	8	7.5	19.8
6	22	51	23.61	8.52	8	20	46.4	45.0	.469489	1161	7	47.7	19.8
11	22	51	15.09	5.47	8	21	31.4	26.1	.470650	1200	7	27.9	19.8
16	22	51	9.62	-2.31	8	21	57.5	-6.5	.471850	1229	7	8.1	19.7
21	22	51	7.31	+0.87	8	22	4.0	+13.1	.473079	1247	6	48.4	19.7
26	22	51	8.18	4.14	8	21	50.9	33.0	.474326	1257	6	28.7	19.6
Dec. 1	22	51	12.32	7.38	8	21	17.9	52.8	.475583	1256	6	9.1	19.6
6	22	51	19.70	10.60	8	20	25.1	72.4	.476839	1247	5	49.5	19.5
11	22	51	30.30	13.73	8	19	12.7	91.3	.478086	1227	5	30.0	19.4
16	22	51	44.03	16.84	8	17	41.4	110.2	.479313	1199	5	10.6	19.3
21	22	52	0.87	19.80	8	15	51.2	128.0	.480512	1162	4	51.3	19.3
26	22	52	20.67	22.67	8	13	43.2	145.4	.481674	1115	4	32.0	19.3
31	22	52	43.34	+25.37	8	11	17.8	+161.3	.482789	+1061	4	12.7	-19.2
36	22	53	8.71		S. 8	8	36.5		1.483850		3	53.5	

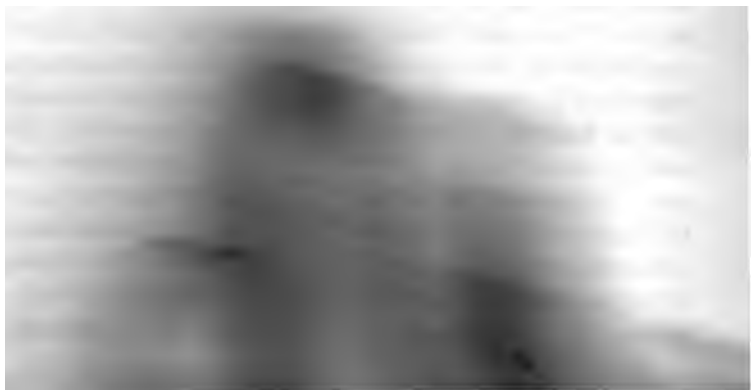
APPENDIX

TO THE

NAUTICAL ALMANAC

FOR

1856.



ON A NEW METHOD

OF COMPUTING

THE PERTURBATIONS OF PLANETS,

By J. F. ENCKE.

[Translated and illustrated with Notes by G. B. ARRY, Esq., Astronomer Royal.

[The method of computing by summation a series of numbers, in which the second difference itself depends upon the number last computed, though little used, has been long since recognized. The oldest trigonometrical tables with which we are acquainted—the tables of the Surya Siddhanta (see Playfair on the Trigonometrical Tables of the Brahmans, Transactions of the Royal Society of Edinburgh, Vol. IV., page 97,)—were calculated in this manner.

The most important paper on this subject in modern times, anterior to the investigations of Professor Encke, is that by Mr. George P. Bond, dated 1849, May 29, and entitled "On some applications of the Method of Mechanical Quadratures," printed in Vol. IV. Part 1, of the Memoirs of the American Academy of Arts and Sciences, page 189. Among the various astronomical applications of the method is one (No. V. page 199), "Calculation of Perturbations by Quadratures," in which the leading steps of the process are sufficiently, though briefly, explained, and an application is made to the perturbations of the moon during an interval of four days. Considerable additions to this paper would perhaps be necessary to make it useful to the practical computer of the perturbations of planets.

Professor Encke's investigations on the computation of special perturbations, as is explained in No. 814 of the Astronomische Nachrichten, were made in complete ignorance of Mr. Bond's Memoir. They were first circulated in a pamphlet, printed in the form of a notice of proceedings of the Berlin Academy, 1851, November 27, and were afterwards reprinted in the Astronomische Nachrichten, Nos. 791, 792. In another notice of the Berlin Academy, Professor Encke explained the modification by which the same fundamental method might be made applicable to the computation of the perturbations of the planets in general. In the Astronomische Nachrichten Professor Encke shows that the accuracy of the results is gained when the computation of pe...

long period. In Nos. 799, 800, and 803 of the same work, Professor Hansen and Dr. Brunnow have given investigations of the perturbations of different elements of a planet's motion, referring generally to Professor Encke's first paper as basis, and scarcely intelligible without it.

Professor Encke's papers are in themselves complete, and can be applied in use without reference to any other work. It appears also to the translator not improbable that Professor Encke's method may ultimately be found more convenient than the others which have been in some measure derived from it. It has therefore appeared advisable to limit the present translation to Professor Encke's papers, omitting so much as relates to the general formulæ of perturbations, which part, perhaps, at present is hardly made sufficiently convenient for use.]

The overwhelming number of small planets makes it now absolutely necessary to proceed in the calculation of their perturbations by a method which shall be at the same time accurate and convenient. In the following essay I shall give such a method, perfectly complete, and extremely convenient for special perturbations, which I have tested by actual application, and which possesses this advantage, that it scarcely requires any analytical developments, but proceeds at once from the simplest fundamental formulæ, and applies these alone and without any intermediate steps.

Since the method is independent of the nature of the orbit, although naturally in different cases it is more or less convenient, and since it presupposes only the first mechanical formulæ of the problem, it recommends itself by this advantage, that every student who is in some measure acquainted with the general proposition will be able to apply it at once.

The form of computation of special perturbations hitherto adopted gives the variations of the elements. It has the double disadvantage; first, that the variations of those quantities (as the rectangular co-ordinates), which are used for the computation of the disturbing forces, are not given immediately; and, secondly, that the perturbations appear very much increased. It is inherent in the nature of the problem that though the alterations in the place and in the magnitude and direction of the velocity are small, the alterations in the new system of elements which will be deduced from them appear far greater. In order to avoid both disadvantages the following method is proposed.

Let us consider the case in which two bodies start from the same point with equal velocities in the same direction, and suppose that one of the bodies continues its pure elliptical motion undisturbed, while the other is disturbed by various forces. Let the radius vector of the elliptical planet at any arbitrary instant t be denoted by r° , and its rectangular co-ordinates at the same instant by x° , y° , z° , and those of the disturbed planet for the same instant by r , x , y , z .

It is known that the movement of the elliptical planet depends on the integration of the differential equations,

$$(1) \quad \frac{d^2x^0}{dt^2} + \frac{k^2x^0}{r^3} = 0, \quad \frac{d^2y^0}{dt^2} + \frac{k^2y^0}{r^3} = 0, \quad \frac{d^2z^0}{dt^2} + \frac{k^2z^0}{r^3} = 0,$$

where k^2 expresses the sum of the masses of the central body and the planet.

These equations are satisfied by the system of six rigorously constant elements $a^0, e^0, \Omega^0, i^0, \pi^0, M^0$, and the known expression of the co-ordinates x^0, y^0, z^0 , by means of these elements : of which no further mention is here necessary.

The movement of the disturbed planet, on the contrary, depends on the three differential equations,

$$(2) \quad \begin{aligned} \frac{d^2x}{dt^2} + \frac{k^2x}{r^3} &= P. \cos QX, \\ \frac{d^2y}{dt^2} + \frac{k^2y}{r^3} &= P. \cos QY, \\ \frac{d^2z}{dt^2} + \frac{k^2z}{r^3} &= P. \cos QZ, \end{aligned}$$

where the quantities on the right hand express the disturbing force, resolved in the directions of x, y , and z . It is well known that these equations are satisfied by the same form of co-ordinates as for the elliptical planet in relation to the six elements a, e, Ω, i, π, M , provided that these elements are no longer considered as pure constants, but are developed from the equations

$$\begin{aligned} a &= a^0 + \int \frac{da}{dt} dt, & e &= e^0 + \int \frac{de}{dt} dt, & \Omega &= \Omega^0 + \int \frac{d\Omega}{dt} dt, \\ i &= i^0 + \int \frac{di}{dt} dt, & \pi &= \pi^0 + \int \frac{d\pi}{dt} dt, & M &= M^0 + \int \frac{dM}{dt} dt, \end{aligned}$$

where $\frac{da}{dt}, \frac{de}{dt}$, &c., denote the known differential co-efficients of the elements depending on the disturbing forces (of which, however, no further application is made here). The analytical development of the equations in system (2) for the small planets of our Solar System throws us upon almost insuperable difficulties, if we aspire to the utmost accuracy. Neither can they be immediately integrated by mechanical quadrature.

But there is no impediment to our undertaking immediately this mechanical integration, if we make use of the equations which are formed by the difference of the two systems (1) and (2). Let

$$x - x^0 = \xi, \quad y - y^0 = \eta, \quad z - z^0 = \zeta$$

these equations are

$$\begin{aligned} \frac{d^2\xi}{dt^2} &= P. \cos \dots && k^2 \\ \frac{d^2\eta}{dt^2} &= P. \cos \dots && k^2 \\ \frac{d^2\zeta}{dt^2} &= P. \cos \dots && k^2 \end{aligned}$$

If we consider for the moment only a single disturbing planet, and if its mass is expressed by $m'k'$, its co-ordinates by x', y', z' , its radius vector by r' , and its distance from the disturbed planet by ρ , then we have

$$\begin{aligned} \text{P. cos QX} &= m'k' \left(\frac{x'-x}{\rho^3} - \frac{x'}{r'^3} \right); \quad \text{P. cos QY} = m'k' \left(\frac{y'-y}{\rho^3} - \frac{y'}{r'^3} \right); \\ \text{(A)} \quad \text{P. cos QZ} &= m'k' \left(\frac{z'-z}{\rho^3} - \frac{z'}{r'^3} \right); \end{aligned}$$

Moreover, since ξ, η, ζ , are small, if we make

$$\delta r = \frac{x^0}{r^0} \xi + \frac{y^0}{r^0} \eta + \frac{z^0}{r^0} \zeta$$

we may commonly write for the quantities within the brackets, in the differential equations, (although not absolutely necessary),

$$\begin{aligned} \frac{x}{r^3} - \frac{x^0}{r^{03}} &= - \left(3 \frac{x^0}{r^0} \delta r - \xi \right) \frac{1}{r^{03}} \\ \text{(3)} \quad \frac{y}{r^3} - \frac{y^0}{r^{03}} &= - \left(3 \frac{y^0}{r^0} \delta r - \eta \right) \frac{1}{r^{03}} \\ \frac{z}{r^3} - \frac{z^0}{r^{03}} &= - \left(3 \frac{z^0}{r^0} \delta r - \zeta \right) \frac{1}{r^{03}} \end{aligned}$$

so that the equations become

$$\begin{aligned} \frac{d^2 \xi}{dt^2} &= m'k' \left(\frac{x'-x}{\rho^3} - \frac{x'}{r'^3} \right) + \frac{k^2}{r^{03}} \left(3 \frac{x^0}{r^0} \delta r - \xi \right) \\ \text{(4)} \quad \frac{d^2 \eta}{dt^2} &= m'k' \left(\frac{y'-y}{\rho^3} - \frac{y'}{r'^3} \right) + \frac{k^2}{r^{03}} \left(3 \frac{y^0}{r^0} \delta r - \eta \right) \\ \frac{d^2 \zeta}{dt^2} &= m'k' \left(\frac{z'-z}{\rho^3} - \frac{z'}{r'^3} \right) + \frac{k^2}{r^{03}} \left(3 \frac{z^0}{r^0} \delta r - \zeta \right) \end{aligned}$$

and the two systems of equations (3) and (4) contain the complete solution of the problem "to find the disturbed co-ordinates," since the elliptical co-ordinates x^0, y^0, z^0 , are already given.

*[If we integrate these equations twice we obtain the following :

$$\begin{aligned} \xi &= \iint \left\{ m'k' \left(\frac{x'-x}{\rho^3} - \frac{x'}{r'^3} \right) + \frac{k^2}{r^{03}} \left(3 \frac{x^0}{r^0} \delta r - \xi \right) \right\} dt^2 \\ \eta &= \iint \left\{ m'k' \left(\frac{y'-y}{\rho^3} - \frac{y'}{r'^3} \right) + \frac{k^2}{r^{03}} \left(3 \frac{y^0}{r^0} \delta r - \eta \right) \right\} dt^2 \\ \zeta &= \iint \left\{ m'k' \left(\frac{z'-z}{\rho^3} - \frac{z'}{r'^3} \right) + \frac{k^2}{r^{03}} \left(3 \frac{z^0}{r^0} \delta r - \zeta \right) \right\} dt^2 \end{aligned}$$

and this is the form in which the equations are actually used, and their solutions are obtained. It is the peculiar object of the remainder of the essay to explain, *first*, how the double integration which is expressed by the sign \iint is to be obtained when the quantity under that sign is given, not in the form of an integrable algebraical formula, but by a series of numerical values computed for equal intervals of time; *secondly*, how the integration is to be effected when the quantity under the sign \iint does itself contain the symbols ξ, η, ζ , whose values are to be found.]

* The paragraphs inclosed in square brackets are additions by the Translator.

In order to effect the mechanical integration, we must make use of the known formulæ for a double integration. Let the tabular formation of the series of differences for the values of the function $f(a), f(a + \omega), f(a + 2\omega), \&c.$, whose arguments $a, a + \omega, a + 2\omega, \&c.$ proceed in arithmetical progression, be as follows :

$$\begin{array}{l} a \\ a + \omega \\ a + 2\omega \end{array} \left\| \begin{array}{l} f(a) \\ f(a + \omega) \\ f(a + 2\omega) \end{array} \right\| \left\| \begin{array}{l} f'(a + \frac{1}{2}\omega) \\ f'(a + \frac{3}{2}\omega) \end{array} \right\| \left\| \begin{array}{l} f''(a) \\ f''(a + \omega) \\ f''(a + 2\omega) \end{array} \right\| \left\| \begin{array}{l} f'''(a + \frac{1}{2}\omega) \\ f'''(a + \frac{3}{2}\omega) \end{array} \right\| \left. \right\| \&c.$$

and let the first series of sums of $f(a), f(a + \omega), f(a + 2\omega), \&c.$, be denoted by $'f$, the second by $''f$, as in the following table :

$$\begin{array}{l} a \\ a + \omega \\ a + 2\omega \end{array} \left\| \begin{array}{l} f(a) \\ f(a + \omega) \\ f(a + 2\omega) \end{array} \right\| \left\| \begin{array}{l} f'(a + \frac{1}{2}\omega) \\ f'(a + \frac{3}{2}\omega) \end{array} \right\| \left\| \begin{array}{l} ''f(a) \\ ''f(a + \omega) \\ ''f(a + 2\omega) \end{array} \right\|$$

where $'f(a + \frac{3}{2}\omega) = 'f(a + \frac{1}{2}\omega) + f(a + \omega)$, and so on ;

$$''f(a + \omega) = ''f(a) + 'f(a + \frac{1}{2}\omega)$$

$$''f(a + 2\omega) = ''f(a + \omega) + 'f(a + \frac{3}{2}\omega), \text{ and so on ;}$$

and let the problem be, to find $\int f(x)dx$ from $x = a + \frac{1}{2}\omega$ to $x = a + (i + \frac{1}{2})\omega$, and also to find $\iint f(x)dx^2$ between the same limits, where the constants in both integrals are to be so taken that the values of the integrals are $= 0$ for $x = a + \frac{1}{2}\omega$; then the process will be as follows :

For $'f(a + \frac{1}{2}\omega)$ use the value C_1 , where

$$C_1 = -\frac{1}{24}f'(a + \frac{1}{2}\omega) + \frac{17}{5760}f'''(a + \frac{1}{2}\omega) + \&c.$$

For $''f(a)$ use the value C_2 , where

$$C_2 = +\frac{1}{24}f(a + \omega) - \frac{17}{5760}\{2f''(a + \omega) + f''(a)\} + \&c.$$

Use these two quantities as the primary values in the series of numbers represented by $'f$ and $''f$, forming all the subsequent values by successive addition as is explained above.

Then we shall have *

$$\int f(x)dx, \text{ from } a + \frac{1}{2}\omega \text{ to } a + i + \frac{1}{2}\omega, = \omega \left\{ 'f(a + i + \frac{1}{2}\omega) + \frac{1}{2}f''(a + i + \frac{1}{2}\omega) - \frac{17}{5760}f'''(a + i + \frac{1}{2}\omega) \right\}$$

$$\iint f(x) dx^2, \text{ from } a + \frac{1}{2}\omega \text{ to } a + i + \frac{1}{2}\omega, =$$

$$\omega \cdot \left\{ \begin{aligned} &\frac{1}{2} f''(a+i\omega) - \frac{1}{48} f'(a+i\omega) + \frac{17}{3840} f'''(a+i\omega) \\ &+ \frac{1}{2} f''(a+i+1.\omega) - \frac{1}{48} f'(a+i+1.\omega) + \frac{17}{3840} f'''(a+i+1.\omega) \end{aligned} \right\}$$

$$\int f(x) dx, \text{ from } a + \frac{1}{2}\omega \text{ to } a + i\omega, =$$

$$\omega \cdot \left\{ \begin{aligned} &\frac{1}{2} f(a+i-\frac{1}{2}\omega) - \frac{1}{24} f'(a+i-\frac{1}{2}\omega) + \frac{11}{1440} f''(a+i-\frac{1}{2}\omega) \\ &+ \frac{1}{2} f(a+i+\frac{1}{2}\omega) - \frac{1}{24} f'(a+i+\frac{1}{2}\omega) + \frac{11}{1440} f''(a+i+\frac{1}{2}\omega) \end{aligned} \right\}$$

$$\int f(x) dx^2, \text{ from } a + \frac{1}{2}\omega \text{ to } a + i\omega, =$$

$$\omega^2 \cdot \left\{ f''(a+i\omega) + \frac{1}{12} f'(a+i\omega) - \frac{1}{240} f'''(a+i\omega) \right\}$$

If the interval ω is taken sufficiently small, the terms following the first (which are also multiplied by the small fractions $\frac{1}{24}$, $\frac{1}{12}$, &c.) are always very minute, so that we have with great approximation

$$\iint f(x) dx^2, \text{ from } a + \frac{1}{2}\omega \text{ to } a + i\omega, = \omega'' f(a+i\omega)$$

Here we may remark, that for the formation of $f''(a+i\omega)$ the numerical values as far as $f(a+i-1.\omega)$ only are employed; not $f(a+i\omega)$, since

$$f'(a+i-\frac{1}{2}\omega) = f'(a+i-\frac{3}{2}\omega) + f(a+i-1.\omega)$$

$$f''(a+i\omega) = f''(a+i-1.\omega) + f'(a+i-\frac{1}{2}\omega)$$

Consequently, if, in the application to the double integration before us, the values of $\frac{d^2\xi}{dt^2}$ (for example), have been computed for the times t , $t+\tau$, $t+2\tau$, &c., as far as $t+i-1.\tau$, then by the double summation we obtain a very approximate value of ξ for the time $t+i\tau$. And this can be at once used for substitution in the expression of $\frac{d^2\xi}{dt^2}$ (since that expression must be computed for $t+i\tau$, and the ξ , &c., for $t+i\tau$ are involved in it), without any investigation or repetition of trials, and frequently with a degree of approximation which is quite sufficient. In this simple artifice, of always carrying on the first and second summation immediately after the computation of the differential co-efficients $\frac{d^2\xi}{dt^2}$, &c., there is contained a facility of referring to the higher powers of the masses, in the perturbations, with a degree of accuracy that has hardly ever

yet been obtained. We should always come a little nearer to the truth, on the assumption that the values of $\frac{d^2\xi}{dt^2}$ do not vary too rapidly, by taking for the integral $\iint f(x)dx^2$ from $a + \frac{1}{2}\omega$ to $a + i\omega$,

$$\omega^2 \left\{ f(a + i\omega) + \frac{1}{12} f(a + i - 1.\omega) \right\}$$

or better by using a provisional approximate value [of $f(a + i\omega)$] according to the course of the function f [and then using for the integral,

$$\omega^2 \left\{ f(a + i\omega) + \frac{1}{12} f(a + i\omega) \right\} .]$$

From the simplicity of the formulæ it is now very easy to see the course of proceeding.* Suppose that for any arbitrary time t^0 the elements $a^0, e^0, \Omega^0, i^0, x^0, M^0$, are determined. A proper interval τ is to be chosen; and then, for the times $t^0 - \frac{3}{2}\tau$ †, $t^0 - \frac{1}{2}\tau$, $t^0 + \frac{1}{2}\tau$, $t^0 + \frac{3}{2}\tau$, &c., the following quantities are to be computed (which must necessarily be regarded as fundamental data)

$$x^0, y^0, z^0, r^0, x', y', z', r',$$

and (by means of these)

$$\rho^0 = (x' - x)^2 + (y' - y)^2 + (z' - z)^2$$

Then the disturbing forces are to be computed by the formulæ (A), the quantities x^0, y^0, z^0 , being for the present substituted for x, y, z . Now considering

the quantities $\frac{d^2\xi}{dt^2}, \frac{d^2\eta}{dt^2}, \frac{d^2\zeta}{dt^2}$ as functions of t and τ , we shall certainly be very

near the truth if in $f(t - \frac{1}{2}\tau)$ and $f(t + \frac{1}{2}\tau)$ we make the value of $\frac{x}{r^3} - \frac{x^0}{r^0{}^3} = 0$,

or in other words, if we neglect the symbols ξ, η, ζ , in these functions. From these values of the functions, by the double summation, we obtain very approxi-

mately the values of ξ, η, ζ , which apply to the time $t + \frac{3}{2}\tau$, and by means

of them we compute the complete expression of $f(t + \frac{3}{2}\tau)$; from this we obtain

the values of ξ, η, ζ , which apply to the time $t + \frac{5}{2}\tau$, and so on. By this

process we obtain with very great approximation (generally quite sufficient)

the values of ξ, η, ζ , for $t^0 + \frac{1}{2}\tau, t^0 + \frac{3}{2}\tau$, &c. If the utmost accuracy is

required, these values are to be used to form the quantities x, y, z , which appear in the formulæ (A), by the expressions

$$x^0 + \xi = x, y^0 + \eta = y, z^0 + \zeta = z,$$

* See Note B. at the end.

† The time $t^0 - \frac{3}{2}\tau$ appears in the explanation of the method of TRANSLATOR.

will be seen from the explanation is not required.—

and then (by repetition of the process)* a perfectly correct series of the values of ξ , η , ζ , may be obtained for the times $t + \frac{1}{2} \tau$, $t + \tau$, $t + \frac{3}{2} \tau$, &c.

The difference between the tables thus obtained and the ordinary planetary tables consists in this: that in the latter the arguments are formed by different combinations of the mean anomalies or longitudes of the two planets (the disturbing and the disturbed), whereas in those here computed the time is the general argument. A second difference is, that the ordinary planetary tables give the perturbations of longitude in the orbit, of radius vector, and of latitude, but in those which result from the method now proposed the perturbations of the true rectangular co-ordinates are exhibited. This latter difference might, if necessary, be removed with little trouble, since, on account of the smallness of the perturbations, the changes may for the most part be considered as differential quantities, and thus can be treated by means of differential co-efficients. In fact, however, this last difference is an unessential one, requiring no further consideration here.

For a real application of the new method, in order to test its convenience, I have selected the perturbations of Vesta by Jupiter from 1853, Sept. 11, 0^h Paris time, to 1854, May 21, 0^h Paris time. The elements of Vesta for the first of these instants were,

L°	120	6	28.2	}	For 1853, Sept. 11, 0 ^h Paris Mean Solar Time, but measured from the mean equinox of 1810.
M°	.229	51	50.8		
π°	250	14	37.4		
Ω°	102	47	14.1		
i°	7	8	26.5		
ϕ°	5	5	48.8		
μ°	977'' 64529				

* The adopted interval was 42 days. The following are the rectangular co-ordinates and log. radius vector:

0 ^h Paris Time.	x°.	y°.	z°.	Log. r°.
1853: Aug. 21	-0.77094	+2.39950	+0.02767	0.401471
Oct. 2	-1.16254	+2.20279	+0.08095	0.396556
Nov. 13	-1.51500	+1.93200	+0.13152	0.390702
Dec. 25	-1.81421	+1.59363	+0.17746	0.384040
1854: Feb. 5	-2.04681	+1.19692	+0.21688	0.376756
Mar. 19	-2.20045	+0.75413	+0.24792	0.369078
Apr. 30	-2.26453	+0.28091	+0.26888	0.361296
June 11	-2.23158	-0.20418	+0.27330	0.353744

* The effect of this repetition is, to obtain that part of the perturbations which depends on the second order of the disturbing forces. It will rarely be sensible.—TRANSLATOR.

For Jupiter the following positions in his orbit were assumed, the longitudes being referred to the mean equinox of 1810.

Paris Time.	Longitude of Jupiter in his Orbit.	Log. r'.	
1853: Aug. 21	264 47 16.1	0.721167	$\Omega' = 98^\circ 32' 22''$ $i' = 1 18 46.5$
Oct. 2	268 12 17.3	0.719948	
Nov. 13	271 38 28.2	0.718709	
Dec. 25	275 5 50.1	0.717453	
1854: Feb. 5	278 34 24.4	0.716186	
Mar. 19	282 4 11.9	0.714911	
Apr. 30	285 35 13.4	0.713634	
June 11	289 7 29.4	0.712360	

From these are obtained the rectangular co-ordinates of Jupiter, and (by combining them with the rectangular co-ordinates of Vesta) the log. distance of Vesta from Jupiter, as follows :

Paris Time.	x'.	y'.	z'.	Log. ρ .
1853: Aug. 21	-0.47771	-5.24038	+0.02866	0.88340
Oct. 2	-0.16411	-5.24489	+0.02157	0.87590
Nov. 13	+0.15002	-5.23038	+0.01440	0.86654
Dec. 25	+0.46362	-5.19675	+0.00718	0.85517
1854: Feb. 5	+0.77553	-5.14411	-0.00007	0.84163
Mar. 19	+1.08452	-5.07238	-0.00732	0.82568
Apr. 30	+1.38948	-4.98150	-0.01454	0.80705
June 11	+1.68919	-4.87200	-0.02170	0.78557

The mass of Vesta is considered to be 0; that of Jupiter is assumed = $\frac{1}{1053.924}$. The constant* k^2 , supposing the unit of time to be one

* k^2 is the sum of the masses of the central and the revolving body, estimated (as is necessarily implied in the equations $\frac{d^2x^0}{dt^2} + \frac{k^2x^0}{r^0^3} = 0$, &c.) by the double of the line through which its action at the distance of 1 linear measure would draw a particle in the unit of time. It is therefore a linear measure. If the revolving body describe a circle whose radius is a , or an ellipse whose semi-major axis is a , k^2 is easily found = $\frac{4\pi^2a^3}{T^3}$, T being the time of a sidereal revolution. If the revolving body be the Earth, and if the semi-major axis of the Earth's orbit be the unit of linear measure, $a = 1$. If the day be the unit of time, $T = 365.2564$. Hence the sum of the masses of the Sun and Earth = $\frac{4\pi^2}{(365.2564)^3} = .0002959131$. If we prefer to express this value in the Sun and on its orbit, supposed circular, the sum of masses suppose the Earth's mass to be $\frac{1}{355000}$ of the Sun = .0002959123 and 61'' 03628. But in using

day, is, if expressed in seconds of arc, $61''\cdot 03625$. Consequently the assumed $\omega = 42$;* and in order to produce the same effect as by the multiplication by ω in the integral, the expressions for the forces in (A) may be multiplied by $42 = 1764$. Then

$$1764 \times m'k^2 = 1764 \times \frac{1}{1053\cdot 924} \times 61''\cdot 03625 = 102''\cdot 1591$$

$$\text{and } 1764 \times k^2 = 1764 \times \cdot 0002959123 = \cdot 521989$$

and as the perturbations of the co-ordinates are also to be expressed in seconds† [as measured on the earth's orbit, supposed circular], we have to compute,

$$\begin{aligned} \frac{d^2\xi}{dt^2} &= 102''\cdot 1591 \left\{ \frac{x' - x''}{\rho^3} - \frac{x'}{r^3} \right\} + \frac{0\cdot 521989}{r^2} \left\{ 3 \frac{x''}{r} \delta r - \xi \right\} \\ \frac{d^2\eta}{dt^2} &= 102''\cdot 1591 \left\{ \frac{y' - y''}{\rho^3} - \frac{y'}{r^3} \right\} + \frac{0\cdot 521989}{r^2} \left\{ 3 \frac{y''}{r} \delta r - \eta \right\} \quad (5) \\ \frac{d^2\zeta}{dt^2} &= 102''\cdot 1591 \left\{ \frac{z' - z''}{\rho^3} - \frac{z'}{r^3} \right\} + \frac{0\cdot 521989}{r^2} \left\{ 3 \frac{z''}{r} \delta r - \zeta \right\} \end{aligned}$$

$$\text{where } \delta r = \frac{x''}{r} \xi + \frac{y''}{r} \eta + \frac{z''}{r} \zeta$$

Assuming now the Ecliptic for our fundamental plane, the following values are found for the first part of the right-hand side, or for P. cos QX, P. cos QY, P. cos QZ.

		P. cos QX.	P. cos QY.	P. cos QZ.
		"	"	"
1853	Aug. 21	+0·402	+1·928	-0·0199
	Oct. 2	+0·356	+1·915	-0·0295
	Nov. 13	+0·321	+1·890	-0·0403
	Dec. 25	+0·299	+1·852	-0·0525
1854	Feb. 5	+0·298	+1·798	-0·0661
	Mar. 19	+0·325	+1·729	-0·0816
	Apr. 30	+0·389	+1·640	-0·0991
	June 11	+0·503	+1·533	-0·1186

these numbers with any other planet it must be most carefully remembered that $61''\cdot 03628$ is not an angle, but a linear measure defined by the corresponding part of the circumference of a circle whose radius equals the semi-major axis of the Earth's orbit.—TRANSLATOR.

* It amounts to the same, whether we suppose the unit of time to be 1 day, in which case $\omega = 42$, and k^2 has the values $61''\cdot 03628$ and $\cdot 0002959123$; or whether we suppose the unit of time to be 42 days, in which case $\omega = 1$, $T = \frac{365\cdot 2564}{42}$, and $k^2 = \frac{4\pi^2 \times 42^2}{(365\cdot 2564)^2} = 42^2 \times 61''\cdot 03628$ or $= 42^2 \times \cdot 0002959123$. The latter supposition will perhaps make the subsequent computation of $\frac{dx}{dt}$ more intelligible.—TRANSLATOR.

† It would perhaps have been better if the confusing measure δ had not been introduced. No advantage or convenience is gained in any part of the essay the author himself suggests the desirability of that purpose.—TRANSLATOR.

the Earth's orbit
' in a subsequent
" a multiplier

From these, the beginning of the simple and double summation for each of the three values, (in order to find by means of them the provisional ξ , η , ζ , of the following argument) is thus formed.

	ξ						ζ		
	f	f'	$''f$	f	f'	$''f$	f	f'	$''f$
Aug. 21	+0'402	"	+0'015†	+1'928	"	+0'079	-0'0199	"	-0'0012
Oct. 2	+0'356	+0'002*	+0'017	+1'915	+0'001	+0'080	-0'0295	+0'0004	-0'0008

From these we find by the formulæ of integration

	ξ	η	ζ
Aug. 21	- + 0''048‡	+ 0''240	- 0''0029
Oct. 2	- + 0''047	+ 0''240	- 0''0033

These numbers are now to be used for the computation of the second parts of the right-hand side of the equations (5), or $\frac{0'522}{r^0} \left\{ 3 \frac{z^0}{r^0} \delta r - \xi \right\}$, $\frac{0'522}{r^0} \left\{ 3 \frac{y^0}{r^0} \delta r - \eta \right\}$, $\frac{0'522}{r^0} \left\{ 3 \frac{z^0}{r^0} \delta r - \zeta \right\}$, which for convenience we may call $\delta.d^2\xi$, $\delta.d^2\eta$, $\delta.d^2\zeta$. Thus we obtain

	$\delta.d^2\xi$	$\delta.d^2\eta$	$\delta.d^2\zeta$
Aug. 21	- - 0''008§	+ 0''012	+ 0''0003
Oct. 2	- - 0''011	+ 0''009	+ 0''0007

These numbers are to be combined with P. cos QX, P. cos QY, P. cos QZ,

* Confining our explanation for the moment to ξ , the first number in the column f' is that which in the preceding explanation is called C_1 , and is to be $= -\frac{1}{24}$ of the first number in the first differences $= -\frac{1}{24} (0'356 - 0'402) = + 0''002$.—TRANSLATOR.

† The first number in the column $''f$ is that which is called C_2 , and is to be $\frac{1}{24}$ of the second value of $f = \frac{+0''356}{24} = + 0''015$. The second value of $''f$ is found by adding to this the value of f' .—TRANSLATOR.

‡ The formulæ used for this integration is the last of those collected in the preceding explanation, $''f(a + i\omega) + \frac{1}{12} f(a + i\omega)$. Thus the first number for ξ is $+ 0''015 + \frac{0''402}{12} = + 0''048$:

§ is $+ 0''017 + \frac{0''356}{12} = + 0''047$.—TRANSLATOR.

§ will be easily computed from the formulæ for δr and the values of ξ , η , ζ , with Vesta given above.

and the process of summation is to be followed exactly as before. Thus we find for the corrected beginning of the summation table,

	ξ			η			ζ		
	f	' f	" f	f	' f	" f	f	' f	" f
Aug. 21	+0.394	"	+0.014	+1.940	"	+0.080	-0.0196	"	+0.0012
Oct. 2	+0.345	+0.002	+0.016	+1.924	+0.001	+0.081	-0.0288	+0.0004	-0.0008
Nov. 13		+0.347*	+0.363		+1.925	+2.006		-0.0284	-0.0008

For the next step, I make the following rather arbitrary assumptions for November 13,

$$\xi = +0.405\ddagger, \eta = +2.156, \zeta = -0.0324$$

from which are deduced for November 13,

$$\delta. d^2\xi = -0.108, \delta. d^2\eta = +0.044, \delta. d^2\zeta = +0.0093$$

Consequently, by combining these values with those of the forces $P. \cos QX$, $P. \cos QY$, $P. \cos QZ$, we have the following very approximate values of $d^2\xi, d^2\eta, d^2\zeta$, for November 13 [to be placed in the columns headed f]:

$$+0.213 \quad +1.934 \quad -0.0310$$

and if we proceed to deduce from their summation the values of ξ, η, ζ , for December 25, we first obtain in the columns " f " the numbers

$$+0.923 \quad +5.865 \quad -0.0886$$

which aid us in obtaining the approximate values of ξ, η, ζ , for December 25. By these continued operations, which in practice, from the simplicity of the formulæ, are made with uncommon ease and convenience, I obtained the following table for the true or very approximate values of $\frac{d^2\xi}{dt^2}, \frac{d^2\eta}{dt^2}, \frac{d^2\zeta}{dt^2}$:

		$\frac{d^2\xi}{dt^2}$	$\frac{d^2\eta}{dt^2}$	$\frac{d^2\zeta}{dt^2}$
		"	"	"
1853	Aug. 21	+0.394	+1.940	-0.0196
	Oct. 2	+0.345	+1.924	-0.0288
	Nov. 13	+0.213	+1.934	-0.0310
	Dec. 25	-0.003	+1.865	-0.0230
1854	Feb. 5	-0.217	+1.612	-0.0110
	Mar. 19	-0.253	+1.126	-0.0141
	Apr. 30	+0.122	+0.480	-0.0610
	June 11	+1.140	-0.049	-0.1853

* The value +0.347 in the column ' f ' is formed by adding +0.345 to +0.002, and the value +0.363 in the column " f " is formed by adding +0.347 to +0.016.—TRANSLATOR.

† These assumptions may be guided by either of the following considerations. Since the distance in time of Nov. 13 from Sept. 11 (the beginning of the integration) is three times the distance of Oct. 2, and since on Sept. 11 both ξ and $\frac{d\xi}{dt} = 0$, the value of ξ for Nov. 13 will be

On comparing these values with those given above for $P. \cos QX$, &c., it will at once be seen from their difference that the quantities denoted $\delta. d^2\xi$ are proportionally very important.*

This table was now integrated from 21 to 21 days, † and so as to obtain both ξ, η, ζ , and their differentials (the latter by means of the first summation in the column headed f). Here it is to be considered that, for the first differential, the factor ω ought properly to be used, not ω^2 . Consequently the differential coefficients, immediately obtained thus, are referred to the unit of 42 days, or are 42 times the daily differential coefficient.

Thus the two following tables are obtained :

	$x-x^0.$	$y-y^0.$	$z-z^0.$
	"	"	"
1853: Sept. 11	0.000	0.000	0.0000
Oct. 2	+ 0.045	+ 0.241	- 0.0032
23	+ 0.178	+ 0.963	- 0.0138
Nov. 13	+ 0.381	+ 2.167	- 0.0318
Dec. 4	+ 0.639	+ 3.856	- 0.0578
25	+ 0.923	+ 6.020	- 0.0905
1854: Jan. 15	+ 1.206	+ 8.655	- 0.1291
Feb. 5	+ 1.462	+ 11.723	- 0.1719
26	+ 1.660	+ 15.200	- 0.2172
Mar. 19	+ 1.799	+ 19.019	- 0.2656
Apr. 9	+ 1.866	+ 23.123	- 0.3166
30	+ 1.917	+ 27.427	- 0.3770
May 21	+ 1.985	+ 31.849	- 0.4510
	$42 \frac{d(x-x^0)}{dt}$	$42 \frac{d(y-y^0)}{dt}$	$42 \frac{d(z-z^0)}{dt}$
	"	"	"
1853: Sept. 11	0.000	0.000	0.0000
Oct. 2	+ 0.182	+ 0.963	- 0.0135
23	+ 0.342	+ 1.925	- 0.0285
Nov. 13	+ 0.468	+ 2.894	- 0.0441
Dec. 4	+ 0.551	+ 3.856	- 0.0591
25	+ 0.576	+ 4.805	- 0.0717
1854: Jan. 15	+ 0.548	+ 5.713	- 0.0819
Feb. 5	+ 0.459	+ 6.561	- 0.0883
26	+ 0.338	+ 7.316	- 0.0935
Mar. 19	+ 0.199	+ 7.946	- 0.0984
Apr. 9	+ 0.103	+ 8.435	- 0.1095
30	+ 0.090	+ 8.751	- 0.1309
May 21	+ 0.251	+ 8.920	- 0.1737

nearly nine times that for Oct. 2. Or (which is better and more general) an approximate value may be conjectured for f , and then $\xi = "f + \frac{f^2}{12}$. The same applies to η and ζ .—TRANSLATOR.

* This will also be seen clearly in the integration in Note B, where the quantity $\delta. d^2\xi$ is the differer

† and the number in the column f .—TRANSLATOR.

‡ integration in the beginnings of the essay must all be used. Those

§ y to October 23, December 4, &c.; and those which are

¶ November 13, &c.—TRANSLATOR.

It would probably have been better to choose for unity the unit of the 7th place of decimals instead of the second [on the Earth's orbit]. Numbers will be obtained, referred to the unit of the 7th decimal, by multiplying the numbers here given by

$$50 \left(1 - \frac{1}{33}\right) \left(1 - \frac{1}{14000}\right)$$

In order to test the practical accuracy of the results, I made use of the calculations of perturbations which I had formerly completed with the same data by the old method of the Variation of Constants. I had then found for the same times, with the same elements, the following differential co-efficients of the elements :

	$42 \frac{di}{dt}$	$42 \frac{d\Omega}{dt}$	$42 \frac{d\phi}{dt}$	$42 \frac{d\pi}{dt}$	$1764 \frac{d\mu}{dt}$	$42 \frac{dM}{dt}$
Aug. 21	+0.186	+0.133	+0.963	+61.658	+1.26825	-69.183
Oct. 2	+0.145	+0.315	+0.927	+68.538	+1.57875	-75.111
Nov. 13	+0.102	+0.392	+0.684	+75.189	+1.85178	-80.583
Dec. 25	+0.062	+0.365	+0.233	+80.559	+2.07071	-84.559
Feb. 5	+0.030	+0.254	-0.355	+83.502	+2.21407	-85.921
Mar. 19	+0.006	+0.087	-0.930	+82.991	+2.25510	-83.684
Apr. 30	-0.004	-0.094	-1.480	+78.299	+2.16037	-77.184
June 11	-0.004	-0.237	-1.634	+69.392	+1.89282	-66.475

Integrating these from 1853, Sept. 11, to 1854, May 21, and connecting the double integral $\iint \frac{d\mu}{dt} dt^2$ with the integral of $\frac{dM}{dt}$, we obtain the following changes of elements produced by these perturbations in the interval from September 11 to May 21 :

$$\begin{aligned} \Delta i &= +0.340 \\ \Delta \Omega &= +1.305 \\ \Delta \phi &= -0.975 \\ \Delta \pi &= +468.420 \\ \Delta \mu &= +0.28825 \\ \Delta M &= -452.275 \end{aligned}$$

On the other hand, if we take the final values of the changes of the co-ordinates and their differential co-efficients found above, namely,

$$\frac{dx}{dt} = \frac{dx^\circ}{dt} + 0''.251 : \frac{dy}{dt} = \frac{dy^\circ}{dt} + 8''.920 : \frac{dz}{dt} = \frac{dz^\circ}{dt} - 0''.1737$$

$$x = x^\circ + 1''.985 : y = y^\circ + 31''.849 : z = z^\circ - 0''.4510$$

and deduce* from them the elements which correspond to these six new values, and then compare them with the assumed elements for September 11, we obtain from the new method of computing perturbations the following changes of

* See Note C. at the end.

elements. I place by their side their differences from those found by the Variation of Constants.

$\Delta i = +0.341$	Difference from the former calculation	$+0.001$
$\Delta \Omega = +1.295$	„ „ „	-0.010
$\Delta \phi = -0.963$	„ „ „	$+0.012$
$\Delta \pi = +468.127$	„ „ „	-0.293
$\Delta \mu = +0.28807$	„ „ „	-0.00018
$\Delta M = -451.889$	„ „ „	$+0.386$
and, consequently,		
$\Delta L = +16.238$	„ „ „	$+0.093$

This agreement may be called perfect, since the two calculations were made quite independently of each other, and at a time when there was no thought of comparing them, and therefore small errors of computation may very easily have crept into both. If the calculation were repeated with the accurate values, we might expect to obtain an exact agreement.

The method here given for the computation of special perturbations appears to me really to possess very important advantages over that of the Variation of Constants. In the first place it is, on account of the great simplicity of the formulæ, considerably shorter, since it does not require computation and multiplication with very complicated formulæ in the differential co-efficients of the elements; I believe that only half the time would be required. In the second place, it gives the immediate correction of the quantities which are used for the computation of the forces, and thus affords the means of obtaining rigorous accuracy; to which in the Variation of Constants we may certainly approach very near (perhaps as near as is practically necessary), but which, in theoretical strictness, we can hardly ever or never reach. Whether the perturbations are large or small produces on the application of the method only this effect, that for the large perturbations the intervals must be diminished; in the course of the calculation we see at once whether this is necessary, since we are operating with quantities which are of the same order as the perturbations; whereas, in the Variation of Constants, there appear to be enormous changes in the elements, which, when applied to the calculation of a place, are diminished in a most surprising manner. If the perturbations should become so large that the value

of $\frac{x}{r^3} - \frac{x^0}{r^{0,3}}$ can no longer be expressed by the first term of Taylor's series, it is

but a slight increase of labour to compute this difference immediately; the only inconvenience is that logarithmic tables of a few more decimal places must be used. Finally, it may well be looked upon as an advantage that, since the method uses only the first fundamental equations, every person can fully examine the whole operation, and during the whole process every individual step is

clearly to the eye. I may venture, therefore, to hope that the pertur-

merous small planets, in spite of the increasing number of new

method be computed in a satisfactory way, and that we

shall get very approximate elements for each planet in a shorter time than formerly. It is particularly to be remembered that, for the perturbations of numerous planets, the values x', y', z' , remain the same, and, consequently, for every new planet it is only required to reduce *its* place to rectangular co-ordinates in order to make the formulæ immediately applicable. Thus in future we shall be able more easily to treat the perturbations of the group of planets which principally come into consideration.

I believe that everything necessary for the computation of special perturbations has now been given, except those contrivances which every one will most conveniently arrange to his own judgment. If the perturbations are to be given in polar co-ordinates, the easiest method will be to deduce the perturbations in longitude (L) and latitude (l) and radius vector (r) by the following formulæ:

$$dL = \frac{xdy - ydx}{x^2 + y^2} = \frac{\cos L \cdot dy - \sin L \cdot dx}{r \cos l}$$

$$dl = \frac{-z(xdx + ydy) + (x^2 + y^2)dz}{r^2 \sqrt{x^2 + y^2}} = \frac{-\cos L \cdot \sin l \cdot dx - \sin L \cdot \sin l \cdot dy + \cos l \cdot dz}{r}$$

$$dr = \frac{x}{r} dx + \frac{y}{r} dy + \frac{z}{r} dz$$

If by means of these formulæ we obtain the perturbations of Vesta in longitude, latitude, and common logarithm of r , we find for 1854, May 21,

$$dL = -14'' \cdot 1, dl = -0'' \cdot 1, d \log r = -0 \cdot 0000014$$

from which we may see how great a proportion the changes of the elements bear to the real perturbations.

In the meantime it may be questionable whether, even in respect to convenience, these expressions are preferable, since, in order to obtain L and l we must always have found x, y, z , or must be able to exhibit them easily. If

$$\begin{array}{ll} \cos \Omega = \sin \alpha \cdot \sin A & \sin \Omega = \sin \beta \cdot \sin B \\ -\sin \Omega \cdot \cos i = \sin \alpha \cdot \cos A & \cos \Omega \cdot \cos i = \sin \beta \cdot \cos B \\ \sin \Omega \cdot \sin i = \cos \alpha & -\cos \Omega \cdot \sin i = \cos \beta \end{array}$$

and if, to carry out the analogy of expressions, we assume

$$\begin{array}{l} \sin i = \sin \gamma, \pi - \Omega = C' \\ A + \pi - \Omega = A', B + \pi - \Omega = B' \end{array}$$

then, as is well known, by the use of the true anomaly v , we have

$$\begin{array}{l} x = r \cdot \sin \alpha \cdot \sin (A' + v) \\ y = r \cdot \sin \beta \cdot \sin (B' + v) \\ z = r \cdot \sin \gamma \cdot \sin (C' + v) \end{array}$$

which is the most convenient formula for the computation of $x^\circ, y^\circ, z^\circ$.

[Professor Encke then proceeds to consider how the same method may be applied for investigating the formulæ for general perturbations. As it does not appear that a convenient process has yet been discovered, a part of the Essay is omitted.]

APPENDIX.

During the printing of the preceding sheets, I have carried on the computation of perturbations of Vesta by Jupiter by both methods (the new one, and the Variation of Constants,) so far, that now the double results extend over an interval of more than two years. This was done chiefly in order that no doubt, as to the applicability of the method in all cases, might be introduced by the favourable circumstance, that from 1853, September 11, to 1854, May 21, Vesta was very distant from Jupiter. In reality, however, this was hardly to be feared, from the simplicity of the formulæ.

[It appears unnecessary to give the whole of the process, which in general is exactly similar to that for the first period of time. The following is the only part in which there is any difference.]

The disturbing forces are expressed in units of the 7th decimal place. For the computation of $\frac{d^2\xi}{dt^2}$, $\frac{d^2\eta}{dt^2}$, $\frac{d^2\zeta}{dt^2}$, I assumed for every individual place the values of ξ , η , ζ , as they were found from the second column of summation, with a rough estimation of the progress of the function f , and I immediately repeated the calculation for every place by means of the values found from that first approximation. How rapidly this is done will appear from this statement, that the second computation gave a result differing from the first by 1.0 in units of the seventh place of decimals only once; in general the difference amounted only to 0.3, or 0.5.

For the same time and with the same elements I have also computed the perturbations by the method of Variation of Constants. Both methods are used from 1854, May 24, to 1855, October 7. The following table exhibits the polar co-ordinates at the end of that period, as obtained by the two methods:

	Variation of Constants.	New Method.
Longitude - - -	335° 20' 6".4	335° 20' 6".6
Latitude - - -	-5 40 42.3	-5 40 42.3
Log. Radius Vector -	0.3665032	0.3665042

where it is also to be considered that for the Variation of Constants the elements were twice corrected after computing the perturbations, namely, on 1854, May 21, and 1855, January 28, (by which process the higher powers of the mass were taken into account in computing the forces), but this was not done in the new method.

At places where Jupiter, I have in applying the new method for the perturbations of Vesta for 13 epochs, amid many

interruptions, employed eleven hours. A correct judgment may hence be formed of the convenience and shortness of the method.

SUPPLEMENT.

(Extracted from No. 814 of the *Astronomische Nachrichten*.)

By the help of a small table, the perturbations may be accurately computed with regard to all powers of the masses, supposing that the co-ordinates of the disturbing planet may be considered as perfectly correct.

The original equations are

$$\left. \begin{aligned} X &= m'k^2 \left(\frac{x' - x}{r^3} - \frac{x'}{r'^3} \right) \\ Y &= m'k^2 \left(\frac{y' - y}{r^3} - \frac{y'}{r'^3} \right) \\ Z &= m'k^2 \left(\frac{z' - z}{r^3} - \frac{z'}{r'^3} \right) \end{aligned} \right\} \dots\dots\dots (1)$$

$$x = x^0 + \xi, \quad y = y^0 + \eta, \quad z = z^0 + \zeta$$

$$\frac{d^2\xi}{dt^2} = X + \left(\frac{x^0}{r^{03}} - \frac{x}{r^3} \right) k^2$$

$$\frac{d^2\eta}{dt^2} = Y + \left(\frac{y^0}{r^{03}} - \frac{y}{r^3} \right) k^2$$

$$\frac{d^2\zeta}{dt^2} = Z + \left(\frac{z^0}{r^{03}} - \frac{z}{r^3} \right) k^2$$

The last may be written thus,

$$\left. \begin{aligned} \frac{d^2\xi}{dt^2} &= X + \frac{h^2}{r^{03}} \left\{ \left(1 - \frac{r^{03}}{r^3} \right) x - \xi \right\} \\ \frac{d^2\eta}{dt^2} &= Y + \frac{h^2}{r^{03}} \left\{ \left(1 - \frac{r^{03}}{r^3} \right) y - \eta \right\} \\ \frac{d^2\zeta}{dt^2} &= Z + \frac{h^2}{r^{03}} \left\{ \left(1 - \frac{r^{03}}{r^3} \right) z - \zeta \right\} \end{aligned} \right\} \dots\dots\dots (2)$$

In the first place, by the mechanical quadrature, values of ξ, η, ζ , are given, so approximate that the values of $x = x^0 + \xi, y = y^0 + \eta, z = z^0 + \zeta$, for the succeeding places, may be obtained immediately with sufficient accuracy; and, consequently, where x, y, z , appear in the formulæ (1) and (2), no further correction will be necessary. Since the correction, which is necessary in the mechanical quadrature, and requires an indirect computation, is always only of the form $\frac{1}{12} \frac{d^2\xi}{dt^2}, \frac{1}{12} \frac{d^2\eta}{dt^2}, \frac{1}{12} \frac{d^2\zeta}{dt^2}$, and since these quantities are not formed by summation, they may always be made by proper selection of intervals of such a magnitude that they only influence the sixth or seventh place of decimals. But for X, Y, Z , and x, y, z , in (2), at least for the cases now before us, we only require an accuracy to the fifth decimal. The approximate ξ, η, ζ , of the following place are therefore to be written at once under the x^0, y^0, z^0 , of the place, and the computation is to be continued with the sum of these values.

Next, the factor $1 - \frac{r^{03}}{r^3}$ may be rigorously computed from the difference of squares $r^3 - r^{03}$. Since

$$r^3 = r^{03} + 2 \xi x^0 + 2 \eta y^0 + 2 \zeta z^0 + \xi^2 + \eta^2 + \zeta^2$$

$$\text{let } q = \frac{(x^0 + \frac{1}{2} \xi) \xi + (y^0 + \frac{1}{2} \eta) \eta + (z^0 + \frac{1}{2} \zeta) \zeta}{r^{03}} \quad (3)$$

then $\frac{r^3}{r^{03}} = 1 + 2q$, and consequently $\frac{r^{03}}{r^3} = (1 + 2q)^{-\frac{3}{2}}$,

and thence $1 - \frac{r^{03}}{r^3} = 1 - (1 + 2q)^{-\frac{3}{2}} = 3q - \frac{3 \cdot 5}{1 \cdot 2} q^2 + \frac{3 \cdot 5 \cdot 7}{1 \cdot 2 \cdot 3} q^3 - \&c.$

$$= q \left\{ 3 \left(1 - \frac{5}{2} q + \frac{5 \cdot 7}{2 \cdot 3} q^2 - \frac{5 \cdot 7 \cdot 9}{2 \cdot 3 \cdot 4} q^3 + \&c. \right) \right\}$$

Assume $f = 3 \left(1 - \frac{5}{2} q + \frac{5 \cdot 7}{2 \cdot 3} q^2 - \frac{5 \cdot 7 \cdot 9}{2 \cdot 3 \cdot 4} q^3 + \&c. \right)$ (4)

then when q is given the value of f may be taken from a table. For this purpose, the factors in the expression for q ,

$$\frac{x^0 + \frac{1}{2} \xi}{r^{03}}, \quad \frac{y^0 + \frac{1}{2} \eta}{r^{03}}, \quad \frac{z^0 + \frac{1}{2} \zeta}{r^{03}}$$

require no further correction, but may be computed at the same time as the first approximation. The following, therefore, will be the course of proceeding for rigorous computation, in which no inconvenience will be found but this, that only one successive place can be obtained at a time.

Suppose that for the different days for which the perturbations are desired, $x^0, y^0, z^0, x', y', z'$, are computed beforehand, then with the approximate value of the next following ξ, η, ζ , we must form,

$$x = x^0 + \xi, \quad y = y^0 + \eta, \quad z = z^0 + \zeta,$$

and with these we must compute X, Y, Z , which will require no further correction. Then we must compute,

$$q = \frac{x^0 + \frac{1}{2} \xi}{r^{03}} \xi + \frac{y^0 + \frac{1}{2} \eta}{r^{03}} \eta + \frac{z^0 + \frac{1}{2} \zeta}{r^{03}} \zeta$$

and must take from the subjoined table the corresponding value of f . The factors $\frac{x^0 + \frac{1}{2} \xi}{r^{03}}, \frac{y^0 + \frac{1}{2} \eta}{r^{03}}, \frac{z^0 + \frac{1}{2} \zeta}{r^{03}}$, will require no further correction. Then,

with values of ξ, η, ζ , repeatedly corrected (if necessary), the computation of

$$\frac{d^2 \xi}{dt^2} = X + (fqx - \xi) \frac{h^3}{r^{03}}$$

$$\frac{d^2 \eta}{dt^2} = Y + (fyy - \eta) \frac{h^3}{r^{03}}$$

$$\frac{d^2 \zeta}{dt^2} = Z + (fz\zeta - \zeta) \frac{h^3}{r^{03}}$$

over again (if necessary) till the resulting values ξ

ξ , η , ζ , agree with those assumed, which will commonly be secured at the first repetition.

The extent of the following table, from $q = -0.021$ to $q = +0.021$, will, for the small planets, suffice for a series of years. For q is nearly $= \delta \text{ hyp. log. } r$, consequently the limits for the variation of the common logarithm of r corresponding to $q = \pm 0.021$ are ± 0.00912 ; or, supposing the mean value of $r = 0.400$, they include a range from 0.391 to 0.409 . As long as δ common logarithm of r remains within these limits, the subjoined table suffices. The passing beyond these limits would imply that r is changed $\frac{1}{48}$ part by perturbations, a change which could happen only in the case in which the elements, from which the calculation begins, differ unusually from their mean values.

How small are the perturbations depending on the higher powers of the mass, in the first year from the time at which the computation of perturbation commences, may be seen from a comparison of the rigorous computation in the example "Perturbations of Vesta by Jupiter from 1853, Sept. 11, to 1855, Oct. 7," with the earlier approximate values. I find rigorously for 1855, Oct. 7.

$$\xi = +0.0005976, \eta = +0.0024245, \zeta = -0.0000928$$

which differ only in the 7th decimal from,

$$\xi = +0.000598, \eta = +0.0024243, \zeta = -0.0000925$$

the values found by the approximate process. For the computation of the elements of a new planet from the first year's observations, a reference to these terms will therefore scarcely ever be necessary, since the uncertainty in the places of the reference stars, so long as the aid of extra meridional observations is required, must in general be greater. In these cases the transformations of Professor Hansen and Dr. Brunn are far more convenient than the formulæ from which I have started.

[The following table extends to the same limits as that of Professor Encke in the *Astronomische Nachrichten*, No. 814, but it contains only every tenth value of the argument. It will very easily be expanded for use.]

TABLE FOR THE COMPUTATION OF SPECIAL PERTURBATIONS.

$$= 3 \left\{ 1 - \frac{5}{2}q + \frac{5 \cdot 7}{2 \cdot 3}q^2 - \frac{5 \cdot 7 \cdot 9}{2 \cdot 3 \cdot 4}q^3 + \&c. \right\}$$

<i>q.</i>	<i>Log. f.</i>	<i>q.</i>	<i>Log. f.</i>	<i>q.</i>	<i>Log. f.</i>
-0.0210	0.500456	-0.0060	0.483678	+0.0090	0.467444
-0.0200	0.499320	-0.0050	0.482580	+0.0100	0.466380
-0.0190	0.498186	-0.0040	0.481483	+0.0110	0.465319
-0.0180	0.497055	-0.0030	0.480389	+0.0120	0.464259
-0.0170	0.495927	-0.0020	0.479298	+0.0130	0.463202
-0.0160	0.494801	-0.0010	0.478208	+0.0140	0.462147
-0.0150	0.493678	0.0000	0.477121	+0.0150	0.461095
-0.0140	0.492557	+0.0010	0.476037	+0.0160	0.460044
-0.0130	0.491438	+0.0020	0.474954	+0.0170	0.458996
-0.0120	0.490323	+0.0030	0.473875	+0.0180	0.457950
-0.0110	0.489209	+0.0040	0.472797	+0.0190	0.456906
-0.0100	0.488098	+0.0050	0.471722	+0.0200	0.455864
-0.0090	0.486989	+0.0060	0.470649	+0.0210	0.454825
-0.0080	0.485883	+0.0070	0.469578		
-0.0070	0.484780	+0.0080	0.468510		

[Professor Hansen's paper, to which reference is made by Professor Encke, is contained in Nos. 799, 800, and 801, of the *Astronomische Nachrichten*. It gives formulæ for the perturbation of mean anomaly, of log. radius vector, and of co-ordinate *z*, the numerical expressions for which are to be summed nearly in the manner suggested by Professor Encke. Dr. Brunnow's paper is contained in No. 808 of the same work; it gives formulæ for the perturbation of true longitude, radius vector, and co-ordinate *z*, to be treated in the same way.]

Note A, referred to on page 5. By the Translator.

The process by which we shall demonstrate these formulæ is founded on the following assumption. In the series of numbers $f(a), f(a + \omega),$ &c., let any five consecutive numbers $f(a + \overline{n - 2.\omega}), f(a + \overline{n - 1.\omega}), f(a + \overline{n.\omega}), f(a + \overline{n + 1.\omega}), f(a + \overline{n + 2.\omega}),$ be exactly represented by the formula $\alpha + \beta \frac{v}{\omega} + \gamma \left(\frac{v}{\omega}\right)^2 + \delta \left(\frac{v}{\omega}\right)^3 + \epsilon \left(\frac{v}{\omega}\right)^4$; where $a + n\omega + v = x$, (putting x for the general value of the argument), or where the values of $\frac{v}{\omega}$ for the five consecutive arguments are $-2, -1, 0, +1, +2$; then this formula may be assumed to represent, with very great accuracy, the values of the function for all intermediate values of the argument not differing much from $a + n\omega$; as, for instance, for all intermediate values from $\frac{v}{\omega} = -\frac{1}{2}$ to $\frac{v}{\omega} = +\frac{1}{2}$, or from $x = a + n - \frac{1}{2}.\omega$ to $x = a + n + \frac{1}{2}.\omega$.

The values of $\alpha, \beta, \gamma, \delta, \epsilon,$ will easily be found by taking differences. The numbers and differences

$$\begin{array}{l} f(a + \overline{n - 2.\omega}) \\ f(a + \overline{n - 1.\omega}) \\ f(a + \overline{n.\omega}) \\ f(a + \overline{n + 1.\omega}) \\ f(a + \overline{n + 2.\omega}) \end{array} \left| \begin{array}{l} f'(a + \overline{n - \frac{3}{2}.\omega}) \\ f'(a + \overline{n - \frac{1}{2}.\omega}) \\ f'(a + \overline{n + \frac{1}{2}.\omega}) \\ f'(a + \overline{n + \frac{3}{2}.\omega}) \end{array} \right| \left| \begin{array}{l} f''(a + \overline{n - 1.\omega}) \\ f''(a + \overline{n.\omega}) \\ f''(a + \overline{n + 1.\omega}) \end{array} \right| \left| \begin{array}{l} f'''(a + \overline{n - \frac{1}{2}.\omega}) \\ f'''(a + \overline{n.\omega}) \\ f'''(a + \overline{n + \frac{1}{2}.\omega}) \end{array} \right| f''''(a + n\omega)$$

must correspond to the following

$$\begin{array}{l} \alpha - 2\beta + 4\gamma - 8\delta + 16\epsilon \\ \alpha - \beta + \gamma - \delta + \epsilon \\ \alpha \\ \alpha + \beta + \gamma + \delta + \epsilon \\ \alpha + 2\beta + 4\gamma + 8\delta + 16\epsilon \end{array} \left| \begin{array}{l} \beta - 3\gamma + 7\delta - 15\epsilon \\ \beta - \gamma + \delta - \epsilon \\ \beta + \gamma + \delta + \epsilon \\ \beta + 3\gamma + 7\delta + 15\epsilon \end{array} \right| \left| \begin{array}{l} 2\gamma - 6\delta + 14\epsilon \\ 2\gamma + 2\epsilon \\ 2\gamma + 6\delta + 14\epsilon \end{array} \right| \left| \begin{array}{l} 6\delta - 12\epsilon \\ 6\delta + 12\epsilon \end{array} \right| 24\epsilon$$

by comparison of which, $\epsilon = \frac{1}{24} f''''(a + n\omega),$

$$\delta = \frac{1}{12} f'''(a + \overline{n - \frac{1}{2}.\omega}) + \frac{1}{12} f'''(a + \overline{n + \frac{1}{2}.\omega}),$$

$$\gamma = \frac{1}{2} f''(a + n\omega) - \frac{1}{24} f''''(a + n\omega),$$

$$\beta = \frac{1}{2} f'(a + \overline{n - \frac{1}{2}.\omega}) + \frac{1}{2} f'(a + \overline{n + \frac{1}{2}.\omega}) - \frac{1}{12} f'''(a + \overline{n - \frac{1}{2}.\omega}) - \frac{1}{12} f'''(a + \overline{n + \frac{1}{2}.\omega}),$$

$$\alpha = f(a + n\omega).$$

Now, first, to find the integral $\int f(x) dx$ between the limits $a + \frac{1}{2} \omega$ and $a + (i + \frac{1}{2})\omega.$

The general value of $\int f(x) dx$, or $\int f(x) dv$, or $\int \left(a + \beta \frac{v}{\omega} + \gamma \left(\frac{v}{\omega} \right)^2 + \delta \left(\frac{v}{\omega} \right)^3 + \epsilon \left(\frac{v}{\omega} \right)^4 \right) dv$, is $\omega \left(a \frac{v}{\omega} + \frac{1}{2} \beta \left(\frac{v}{\omega} \right)^2 + \frac{1}{3} \gamma \left(\frac{v}{\omega} \right)^3 + \frac{1}{4} \delta \left(\frac{v}{\omega} \right)^4 + \frac{1}{5} \epsilon \left(\frac{v}{\omega} \right)^5 \right)$.
 From $\frac{v}{\omega} = -\frac{1}{2}$ to $\frac{v}{\omega} = +\frac{1}{2}$, or from $x = a + n - \frac{1}{2} \omega$ to $x = a + n + \frac{1}{2} \omega$, this is $2\omega \left(a \frac{1}{2} + \frac{1}{3} \gamma \frac{1}{8} + \frac{1}{5} \epsilon \frac{1}{32} \right) = \omega \left(a + \frac{1}{12} \gamma + \frac{1}{80} \epsilon \right) = \omega \left(f(a + n\omega) + \frac{1}{24} f''(a + n\omega) - \frac{1}{288} f'''(a + n\omega) + \frac{1}{1920} f^{(4)}(a + n\omega) \right) = \omega \left(f(a + n\omega) + \frac{1}{24} f''(a + n\omega) - \frac{17}{5760} f^{(4)}(a + n\omega) \right)$.

From $a + \frac{1}{2}\omega$ to $a + \frac{3}{2}\omega$ we must make $n = 1$: from $a + \frac{3}{2}\omega$ to $a + \frac{5}{2}\omega$, $n = 2$: &c.: and from $a + \left(i - \frac{1}{2}\right)\omega$ to $a + \left(i + \frac{1}{2}\right)\omega$, $n = i$.

Thus we have to add together

$$\begin{aligned} &\omega \left(f(a + \omega) + f(a + 2\omega) + \text{\&c.} + f(a + i\omega) \right) \\ &+ \frac{1}{24} \omega \left(f''(a + \omega) + f''(a + 2\omega) + \text{\&c.} + f''(a + i\omega) \right) \\ &- \frac{17}{5760} \omega \left(f^{(4)}(a + \omega) + f^{(4)}(a + 2\omega) + \text{\&c.} + f^{(4)}(a + i\omega) \right) \end{aligned}$$

Remarking how the sum of a series of differences of a high order is expressible by differences of the next lower order, &c., the sum becomes

$$\begin{aligned} &\omega \left(f\left(a + i + \frac{1}{2}\omega\right) - f\left(a + \frac{1}{2}\omega\right) \right) \\ &+ \frac{1}{24} \omega \left(f''\left(a + i + \frac{1}{2}\omega\right) - f''\left(a + \frac{1}{2}\omega\right) \right) \\ &- \frac{17}{5760} \omega \left(f^{(4)}\left(a + i + \frac{1}{2}\omega\right) - f^{(4)}\left(a + \frac{1}{2}\omega\right) \right) \\ &= \omega \left\{ f\left(a + i + \frac{1}{2}\omega\right) + \frac{1}{24} f''\left(a + i + \frac{1}{2}\omega\right) - \frac{17}{5760} f^{(4)}\left(a + i + \frac{1}{2}\omega\right) \right\} \\ &- \omega \left\{ f\left(a + \frac{1}{2}\omega\right) + \frac{1}{24} f''\left(a + \frac{1}{2}\omega\right) - \frac{17}{5760} f^{(4)}\left(a + \frac{1}{2}\omega\right) \right\} \end{aligned}$$

As $f\left(a + \frac{1}{2}\omega\right)$, which is the first number in the series formed by successive additions of $f(a + \omega)$, $f(a + 2\omega)$, &c., is absolutely arbitrary, we may make it = - $\left(f\left(a + i + \frac{1}{2}\omega\right) + \frac{17}{5760} f^{(4)}\left(a + \frac{1}{2}\omega\right) \right)$. Then the second line vanishes,

and $\int f(x) dx$ betw $a + \frac{1}{2}\omega$ and $a + \left(i + \frac{1}{2}\right)\omega$ limits is

$$\omega \left(f\left(a + i + \frac{1}{2}\omega\right) + \frac{1}{24} f''\left(a + i + \frac{1}{2}\omega\right) - \frac{17}{5760} f^{(4)}\left(a + i + \frac{1}{2}\omega\right) \right)$$

Secondly, to find the integral $\int \int f(x) dx^2$ between the same limits.

From $x = a + \frac{1}{2}\omega$ to $x = a + n - \frac{1}{2}\omega$, the first integral =

$$\omega \left\{ f\left(a + n - \frac{1}{2}\omega\right) + \frac{1}{24} f'\left(a + n - \frac{1}{2}\omega\right) - \frac{17}{5760} f''\left(a + n - \frac{1}{2}\omega\right) \right\}$$

From $x = a + n - \frac{1}{2}\omega$ to any value of x not exceeding $a + n + \frac{1}{2}\omega$, that is, from $\frac{v}{\omega} = -\frac{1}{2}$ to any value of $\frac{v}{\omega}$ not exceeding $+\frac{1}{2}$, the first

$$\begin{aligned} \text{integral} = & \omega \left(\alpha \frac{1}{2} - \frac{1}{2} \beta \frac{1}{4} + \frac{1}{3} \gamma \frac{1}{8} - \frac{1}{4} \delta \frac{1}{16} + \frac{1}{5} \epsilon \frac{1}{32} \right) \\ & + \omega \left(\alpha \frac{v}{\omega} + \frac{1}{2} \beta \left(\frac{v}{\omega}\right)^2 + \frac{1}{3} \gamma \left(\frac{v}{\omega}\right)^3 + \frac{1}{4} \delta \left(\frac{v}{\omega}\right)^4 + \frac{1}{5} \epsilon \left(\frac{v}{\omega}\right)^5 \right) \end{aligned}$$

This is to be added to the expression just given, from $x = a + \frac{1}{2}\omega$ to $x = a + n - \frac{1}{2}\omega$, and their sum is to be used as the quantity which is to be integrated from $\frac{v}{\omega} = -\frac{1}{2}$ to $\frac{v}{\omega} =$ any value not exceeding $+\frac{1}{2}$. The general integral is

$$\begin{aligned} & \omega \left\{ f\left(a + n - \frac{1}{2}\omega\right) + \frac{1}{24} f'\left(a + n - \frac{1}{2}\omega\right) - \frac{17}{5760} f''\left(a + n - \frac{1}{2}\omega\right) \right\} \\ & + \omega \left\{ \alpha \frac{1}{2} - \frac{1}{2} \beta \frac{1}{4} + \frac{1}{3} \gamma \frac{1}{8} - \frac{1}{4} \delta \frac{1}{16} + \frac{1}{5} \epsilon \frac{1}{32} \right\} \\ & + \omega \left\{ \frac{1}{1.2} \alpha \left(\frac{v}{\omega}\right) + \frac{1}{2.3} \beta \left(\frac{v}{\omega}\right)^2 + \frac{1}{3.4} \gamma \left(\frac{v}{\omega}\right)^3 + \frac{1}{4.5} \delta \left(\frac{v}{\omega}\right)^4 + \frac{1}{5.6} \epsilon \left(\frac{v}{\omega}\right)^5 \right\} \end{aligned}$$

and the integral from $x = a + n - \frac{1}{2}\omega$ to $x = a + n + \frac{1}{2}\omega$, or from $\frac{v}{\omega} = -\frac{1}{2}$ to $\frac{v}{\omega} = +\frac{1}{2}$, is

$$\begin{aligned} & \omega \left\{ f\left(a + n - \frac{1}{2}\omega\right) + \frac{1}{24} f'\left(a + n - \frac{1}{2}\omega\right) - \frac{17}{5760} f''\left(a + n - \frac{1}{2}\omega\right) \right\} \\ & + \omega \left\{ \frac{1}{2} \alpha - \frac{1}{8} \beta + \frac{1}{24} \gamma - \frac{1}{64} \delta + \frac{1}{160} \epsilon \right\} \\ & + \omega \left\{ \frac{1}{24} \beta + \frac{1}{320} \delta \right\} \\ & = \omega \left\{ f\left(a + n - \frac{1}{2}\omega\right) + \frac{1}{24} f'\left(a + n - \frac{1}{2}\omega\right) - \frac{17}{5760} f''\left(a + n - \frac{1}{2}\omega\right) \right. \\ & \quad \left. + \frac{1}{2} \alpha - \frac{1}{12} \beta + \frac{1}{24} \gamma - \frac{1}{80} \delta + \frac{1}{160} \epsilon \right\} \end{aligned}$$

Remarking that the second line =

$$\frac{1}{2}f(a+n\omega) - \frac{1}{24}f''(a+n-\frac{1}{2}\omega) - \frac{1}{24}f''(a+n+\frac{1}{2}\omega) + \frac{17}{2880}f'''(a+n-\frac{1}{2}\omega) + \frac{17}{2880}f'''(a+n+\frac{1}{2}\omega) + \frac{1}{48}f'''(a+n\omega) - \frac{17}{11520}f''''(a+n\omega)$$

which, by virtue of the equations $f'(a+n\omega) = f'(a+n+\frac{1}{2}\omega) - f'(a+n-\frac{1}{2}\omega)$,

$$f''(a+n\omega) = f''(a+n+\frac{1}{2}\omega) - f''(a+n-\frac{1}{2}\omega),$$

$$f''''(a+n\omega) = f''''(a+n+\frac{1}{2}\omega) - f''''(a+n-\frac{1}{2}\omega),$$

is equal to

$$-\frac{1}{2}f'(a+n-\frac{1}{2}\omega) + \frac{1}{2}f'(a+n+\frac{1}{2}\omega) - \frac{3}{48}f''(a+n-\frac{1}{2}\omega) - \frac{1}{48}f''(a+n+\frac{1}{2}\omega) + \frac{85}{11520}f'''(a+n-\frac{1}{2}\omega) + \frac{51}{11520}f'''(a+n+\frac{1}{2}\omega)$$

the integral from $x = a + n - \frac{1}{2}\omega$ to $x = a + n + \frac{1}{2}\omega$ becomes

$$\omega^2 \left\{ \frac{1}{2}f'(a+n-\frac{1}{2}\omega) + \frac{1}{2}f'(a+n+\frac{1}{2}\omega) - \frac{1}{48}f''(a+n-\frac{1}{2}\omega) - \frac{1}{48}f''(a+n+\frac{1}{2}\omega) + \frac{17}{3840}f'''(a+n-\frac{1}{2}\omega) + \frac{17}{3840}f'''(a+n+\frac{1}{2}\omega) \right\}$$

We have now to take the sum of all the different values of this expression formed by giving to n the successive values 1, 2, 3 to i . In the same manner as before, this will be

$$\omega^2 \left\{ \frac{1}{2}f'(a+i\omega) + \frac{1}{2}f'(a+i+1\omega) - \frac{1}{48}f''(a+i\omega) - \frac{1}{48}f''(a+i+1\omega) + \frac{17}{3840}f'''(a+i\omega) + \frac{17}{3840}f'''(a+i+1\omega) \right\} - \omega^2 \left\{ \frac{1}{2}f'(a) + \frac{1}{2}f'(a+\omega) - \frac{1}{48}f''(a) - \frac{1}{48}f''(a+\omega) + \frac{17}{3840}f'''(a) + \frac{17}{3840}f'''(a+\omega) \right\}$$

As $f'(a)$, which is the first term in a series of summations, is arbitrary, we may determine it so that the sec

$t = 0$. Putting $\frac{1}{2}f'(a+\omega) = \frac{1}{2}f'(a)$

+ $\frac{1}{2}f'(a + \frac{1}{2}\omega)$, and assumption in the former integral

$\frac{1}{2}f'(a + \frac{1}{2}\omega) = -$ $\frac{1}{2}\omega$, the second line be-

comes $f'(a) - \frac{1}{48}$ $\omega^2 + \frac{17}{11520} 3f'''(a)$

$$+ \frac{17}{11520} f''' \left(a + \frac{1}{2} \omega \right) + \frac{17}{11520} 3 f''' (a + \omega)$$

$$\text{or } {}''f(a) - \frac{1}{24} f(a + \omega) + \frac{17}{5760} \left(f''(a) + 2 f''(a + \omega) \right)$$

Making ${}''f(a) = + \frac{1}{24} f(a + \omega) - \frac{17}{5760} \left(f''(a) + 2 f''(a + \omega) \right)$, the second line vanishes, and the second integral becomes

$$\omega \left\{ \frac{1}{2} {}''f(a + i \cdot \omega) + \frac{1}{2} {}''f(a + i + 1 \cdot \omega) - \frac{1}{48} f(a + i \cdot \omega) - \frac{1}{48} f(a + i + 1 \cdot \omega) \right. \\ \left. + \frac{17}{3840} f'''(a + i \cdot \omega) + \frac{17}{3840} f'''(a + i + 1 \cdot \omega) \right\}$$

Thirdly, to find the integral $\int f(x) dx$ between the limits $a + \frac{1}{2} \omega$ and $a + i \omega$. This is evidently the same as the first integral diminished by that part which is included between the limits $a + i \omega$ and $a + i + \frac{1}{2} \omega$, or diminished by

$$\omega \left(\alpha \frac{1}{2} + \frac{1}{2} \beta \frac{1}{4} + \frac{1}{3} \gamma \frac{1}{8} + \frac{1}{4} \delta \frac{1}{16} + \frac{1}{5} \epsilon \frac{1}{32} \right) \text{ where } \alpha, \beta, \text{ \&c. have the}$$

values found by supposing $n = i$. This quantity is =

$$\omega \left(\frac{1}{2} f(a + i \omega) + \frac{1}{16} f''(a + i - \frac{1}{2} \omega) + \frac{1}{16} f''(a + i + \frac{1}{2} \omega) + \frac{1}{48} f'''(a + i \omega) \right. \\ \left. - \frac{7}{768} f'''(a + i - \frac{1}{2} \omega) - \frac{7}{768} f'''(a + i + \frac{1}{2} \omega) - \frac{17}{11520} f''''(a + i \omega) \right)$$

Applying this with sign changed to the first integral, and remarking that $'f(a + i + \frac{1}{2} \omega) - f(a + i \omega) = 'f(a + i - \frac{1}{2} \omega)$, &c., it becomes

$$\omega \left\{ \frac{1}{2} 'f(a + i + \frac{1}{2} \omega) + \frac{1}{2} 'f(a + i - \frac{1}{2} \omega) - \frac{1}{24} f'(a + i - \frac{1}{2} \omega) \right. \\ \left. - \frac{1}{24} f'(a + i + \frac{1}{2} \omega) + \frac{11}{1440} f'''(a + i - \frac{1}{2} \omega) + \frac{11}{1440} f'''(a + i + \frac{1}{2} \omega) \right\}$$

Fourthly, to find the integral $\iint f(x) dx^2$ between the limits $a + \frac{1}{2} \omega$ and $a + i \omega$. This is the same as the second integral diminished by that part which is included between the limits $a + i \omega$ and $a + i + \frac{1}{2} \omega$, or diminished by

$$\frac{1}{2} \omega \left\{ 'f(a + i - \frac{1}{2} \omega) + \frac{1}{24} f'(a + i - \frac{1}{2} \omega) - \frac{17}{5760} f'''(a + i - \frac{1}{2} \omega) \right\} \\ + \frac{1}{2} \omega \left\{ \frac{1}{2} \alpha - \frac{1}{8} \beta + \frac{1}{24} \gamma - \frac{1}{64} \delta + \frac{1}{160} \epsilon \right\} \\ + \omega \left\{ \frac{1}{8} \alpha + \frac{1}{48} \beta + \frac{1}{192} \gamma + \frac{1}{640} \delta + \frac{1}{1920} \epsilon \right\}$$

which, on giving to α, β , &c., the values corresponding to $n = i$, becomes

$$\omega^2 \left\{ \frac{1}{2} f(a + i - \frac{1}{2}\omega) + \frac{3}{8} f(a + i\omega) - \frac{1}{48} f(a + i + \frac{1}{2}\omega) + \frac{5}{384} f''(a + i\omega) \right. \\ \left. + \frac{17}{11520} f'''(a + i - \frac{1}{2}\omega) + \frac{34}{11520} f'''(a + i + \frac{1}{2}\omega) - \frac{43}{46080} f''''(a + i\omega) \right\}$$

Applying this with sign changed to the second integral, with the usual cautions as to the combination of successive differences, and omitting only a term of the 4th order of differences, the result is

$$\omega^2 \left\{ f(a + i\omega) + \frac{1}{12} f'(a + i\omega) - \frac{1}{240} f''(a + i\omega) \right\}$$

These results are the same as those given in the text.

Note B, referred to on page 7. By the Translator.

The problem treated in the text, namely, the solution of three simultaneous differential equations with variable co-efficients, is somewhat complicated. Perhaps the reader may understand the method of proceeding better by first studying its application to a simpler case.

Let it be required to solve by quadratures the equation $25 \frac{dx}{d\theta^2} + x - 7 = 0$, under the conditions that, when $\theta = 0$, x shall $= 0$, and $\frac{dx}{d\theta}$ shall $= 0$; and let the intervals of θ for quadrature be 1.

This equation may be put in the form $x = \iint 0.28 - 0.04 \cdot x) d\theta^2$.

The first step is to determine approximately the first three values of x . Now since for $\theta = 0$, x is to $= 0$; it follows that for $\theta = -\frac{1}{2}$ and $\theta = +\frac{1}{2}$, x will be very small, and may in a first approximation be made 0. Therefore $f(a)$ and $f(a + \omega)$, which correspond to $\theta = -\frac{1}{2}$ and $\theta = +\frac{1}{2}$, will be 0.28. Their difference or $f'(a + \frac{1}{2}\omega)$ will be 0; and therefore $f''(a + \frac{1}{2}\omega)$, which is to $= -\frac{1}{24} f'(a + \frac{1}{2}\omega) + \&c.$ will $= 0$. For $f''(a)$ we are to take $+\frac{1}{24} f'(a + \omega) - \&c.$, or $+\frac{0.28}{24}$, or $+0.0117$. Thus the summation for the first three terms will stand as follows:

Argument.	θ	f	f'	f''
a		+ .28		+ .0117
$a + \omega$		+ .28	+ .28	+ .0117
$a + 2\omega$		+ .		+ .2917

Now the theory of summation explained above gives for x corresponding to $a + 2\omega$, or the second integral of f corresponding to $a + 2\omega$,

$$\omega^2 \times \left\{ "f(a + 2\omega) + \frac{1}{12} f'(a + 2\omega) \right\}$$

which in this instance becomes

$$1 \times \{ \cdot 2917 + \cdot 0233 \} \text{ or } \cdot 3150$$

Also, as we have assumed in our formulæ that for $\theta = 0$, x and $\frac{dx}{d\theta}$ shall both = 0; it follows that, for small values of θ , x will be nearly proportional to the square of θ . Now for $\theta = 1.5$, $x = \cdot 3150$; therefore for $\theta = \pm 0.5$, $x = \frac{\cdot 3150}{9} = \cdot 0350$. Consequently the first three values of f or $\cdot 28 - \cdot 04 \cdot x$ will be very approximately $\cdot 2786$, $\cdot 2786$, $\cdot 2674$. Now taking their differences, and remarking that the values for ± 1.5 must be sensibly equal,

Argument.	θ	f	f'	f''	f'''
a	$- \cdot 5$	$+ \cdot 2786$		$- \cdot 0112$	$\cdot 0000$
$a + \omega$	$+ \cdot 5$	$+ \cdot 2786$	$\cdot 0000$	$- \cdot 0112$	
$a + 2\omega$	$+ 1.5$	$+ \cdot 2674$	$- \cdot 0112$		

$$\text{Hence } "f(a + \frac{1}{2}\omega) = - \frac{1}{24} f''(a + \frac{1}{2}\omega) + \&c. = 0$$

$$\begin{aligned} "f(a) &= \frac{1}{24} f(a + \omega) - \frac{17}{5760} \{ 2f'''(a + \omega) + f'''(a) \} = \frac{1}{24} f(a + \omega) - \frac{1}{113} f''(a + \omega) \\ &= + \cdot 0116 + \cdot 0001 = + \cdot 0117 \end{aligned}$$

We are now in a state to proceed with the complete series of summations. The expression for x corresponding to any argument $a + i\omega$, making the multiplier $\omega = 1$, is

$$"f(a + i\omega) + \frac{1}{12} f'(a + i\omega) - \frac{1}{240} f''(a + i\omega)$$

The last of these terms, however, will never produce half a unit in the 4th place of decimals, and it will therefore be sufficient to use $"f(a + i\omega) + \frac{1}{12} f'(a + i\omega)$.

In the process of summation $"f(a + i\omega)$ will be obtained before $f(a + i\omega)$ is known. But by a mental process with second differences an approximate value of $f(a + i\omega)$ will be obtained from the three last-determined values of f with abundant accuracy. The process at every step therefore will consist of the following parts:—

1. Form $"f$ by summation.
2. Find an approximate value of f from the three last values.
3. Form x by the formula $"f + \frac{1}{12} f'$: if f was taken reasonably near to the truth, this value of x will be accurate.

4. Form $\cdot 04 \cdot x$.
5. Form $\cdot 28 - \cdot 04 \cdot x$, which is the accurate value of f .
6. Form the next value of f by summation.

This process is carried on with great rapidity. The following table exhibits the whole of the work; the numbers in brackets having been obtained by the preceding operations.

Argument.	θ .	Approx. Value of f .	Accurate Value of f .	f .	f .	$\frac{1}{12}$ th of Approx. Value of f .	x .	$\cdot 04 \times x$
				($\cdot 0000$)				
$a + \omega$	0.5		($\cdot 2786$)	($\cdot 2786$)	($\cdot 0117$)	$\cdot 0232$	$\cdot 0349$	$\cdot 0014$
$a + 2\omega$	1.5	$\cdot 267$	$\cdot 2675$	$\cdot 2786$	$\cdot 2903$	$\cdot 0223$	$\cdot 3126$	$\cdot 0125$
$a + 3\omega$	2.5	$\cdot 246$	$\cdot 2457$	$\cdot 5461$	$\cdot 8364$	$\cdot 0205$	$\cdot 8569$	$\cdot 0343$
&c.	3.5	$\cdot 214$	$\cdot 2142$	$\cdot 7918$	$\cdot 16282$	$\cdot 0178$	$\cdot 16460$	$\cdot 0658$
	4.5	$\cdot 174$	$\cdot 1741$	$\cdot 0060$	$\cdot 26342$	$\cdot 0145$	$\cdot 26487$	$\cdot 1059$
	5.5	$\cdot 127$	$\cdot 1270$	$\cdot 1801$	$\cdot 38143$	$\cdot 0106$	$\cdot 38249$	$\cdot 1530$
	6.5	$\cdot 075$	$\cdot 0749$	$\cdot 3071$	$\cdot 51214$	$\cdot 0063$	$\cdot 51277$	$\cdot 2051$
	7.5	$\cdot 020$	$\cdot 0198$	$\cdot 3820$	$\cdot 65034$	$\cdot 0017$	$\cdot 65051$	$\cdot 2602$
	8.5	$\cdot 037$	$\cdot 0361$	$\cdot 4018$	$\cdot 79052$	$\cdot 0031$	$\cdot 79021$	$\cdot 3161$
	9.5	$\cdot 092$	$\cdot 0905$	$\cdot 3657$	$\cdot 92709$	$\cdot 0077$	$\cdot 92632$	$\cdot 3705$
	10.5	$\cdot 142$	$\cdot 1414$	$\cdot 2752$	$\cdot 105461$	$\cdot 0118$	$\cdot 105343$	$\cdot 4214$
	11.5	$\cdot 186$	$\cdot 1866$	$\cdot 1338$	$\cdot 116799$	$\cdot 0155$	$\cdot 116644$	$\cdot 4666$
	12.5	$\cdot 225$	$\cdot 2244$	$\cdot 9472$	$\cdot 126271$	$\cdot 0188$	$\cdot 126083$	$\cdot 5044$
	13.5	$\cdot 254$	$\cdot 2531$	$\cdot 7228$	$\cdot 133499$	$\cdot 0212$	$\cdot 133287$	$\cdot 5331$
	14.5	$\cdot 274$	$\cdot 2719$	$\cdot 4697$	$\cdot 138196$	$\cdot 0228$	$\cdot 137968$	$\cdot 5519$
	15.5	$\cdot 280$	$\cdot 2799$	$\cdot 1978$	$\cdot 140174$	$\cdot 0233$	$\cdot 139941$	$\cdot 5598$
	16.5	$\cdot 277$	$\cdot 2765$	$\cdot 0821$	$\cdot 139353$	$\cdot 0231$	$\cdot 139122$	$\cdot 5565$
	17.5	$\cdot 262$	$\cdot 2622$	$\cdot 3586$	$\cdot 135767$	$\cdot 0218$	$\cdot 135549$	$\cdot 5422$
	18.5	$\cdot 237$	$\cdot 2374$	$\cdot 6208$	$\cdot 129559$	$\cdot 0197$	$\cdot 129362$	$\cdot 5174$
	19.5	$\cdot 202$	$\cdot 2032$	$\cdot 8582$	$\cdot 120977$	$\cdot 0168$	$\cdot 120809$	$\cdot 4832$
	20.5	$\cdot 160$	$\cdot 1609$	$\cdot 0614$	$\cdot 110363$	$\cdot 0133$	$\cdot 110230$	$\cdot 4409$
	21.5	$\cdot 112$	$\cdot 1122$	$\cdot 2223$	$\cdot 98140$	$\cdot 0093$	$\cdot 98047$	$\cdot 3922$
	22.5	$\cdot 059$	$\cdot 0590$	$\cdot 3345$	$\cdot 84795$	$\cdot 0049$	$\cdot 84746$	$\cdot 3390$
	23.5	$\cdot 001$	$\cdot 0034$	$\cdot 3935$	$\cdot 70860$	$\cdot 0001$	$\cdot 70859$	$\cdot 2834$
	24.5	$\cdot 053$	$\cdot 0523$	$\cdot 3969$	$\cdot 56891$	$\cdot 0044$	$\cdot 56935$	$\cdot 2277$
	25.5	$\cdot 106$	$\cdot 1059$	$\cdot 3446$	$\cdot 43445$	$\cdot 0088$	$\cdot 43533$	$\cdot 1741$
	26.5	$\cdot 156$	$\cdot 1552$	$\cdot 2387$	$\cdot 31058$	$\cdot 0130$	$\cdot 31188$	$\cdot 1248$
	27.5	$\cdot 200$	$\cdot 1984$	$\cdot 0835$	$\cdot 20223$	$\cdot 0167$	$\cdot 20390$	$\cdot 0816$
	28.5	$\cdot 235$	$\cdot 2337$	$\cdot 8851$	$\cdot 11372$	$\cdot 0195$	$\cdot 11567$	$\cdot 0463$
	29.5	$\cdot 259$	$\cdot 2597$	$\cdot 6514$	$\cdot 4858$	$\cdot 0216$	$\cdot 5074$	$\cdot 0203$
	30.5	$\cdot 274$	$\cdot 2753$	$\cdot 3917$	$\cdot 0941$	$\cdot 0228$	$\cdot 1169$	$\cdot 0047$
	31.5	$\cdot 280$	$\cdot 2800$	$\cdot 1164$	$\cdot 0223$	$\cdot 0233$	$\cdot 0010$	$\cdot 0000$
	32.5	$\cdot 272$		$\cdot 1636$	$\cdot 1413$	$\cdot 0227$	$\cdot 1640$	

In order to judge of this we may compare the results with those of the differential equation, subject to the condition $l = 0$, is,

$a(1-e^2)$ the semiparameter, π the longitude of perihelion, i the inclination of the orbit to the ecliptic, Ω the longitude of node, $\omega = \pi - \Omega$, M the mean anomaly, E the excentric anomaly, u the argument of latitude, v the true anomaly $= u - \omega$, r the radius vector, c the velocity of the planet in its orbit, ψ the angle between the tangent to the orbit and the radius vector produced; α, β, A, B , constant angles depending on the position of the orbit; C, U , auxiliary quantities depending on the planet's place in its orbit.

I. Given the elliptic elements, to find the rectangular co-ordinates and their differential co-efficients.

From the equations

$$\begin{aligned} \sin \alpha \cdot \sin A &= \cos \Omega \\ \sin \alpha \cdot \cos A &= -\sin \Omega \cdot \cos i \\ \cos \alpha &= \sin \Omega \cdot \sin i \\ &\text{find } \alpha \text{ and } A. \end{aligned}$$

From the equations

$$\begin{aligned} \sin \beta \cdot \sin B &= \sin \Omega \\ \sin \beta \cdot \cos B &= \cos \Omega \cdot \cos i \\ \cos \beta &= -\cos \Omega \cdot \sin i \\ &\text{find } \beta \text{ and } B. \end{aligned}$$

From the equations

$$\begin{aligned} \sin u + e \cdot \sin v &= \frac{C\sqrt{p}}{k} \sin U \\ \cos u + e \cdot \cos v &= \frac{C\sqrt{p}}{k} \cos U \\ &\text{find } C \text{ and } U \end{aligned}$$

Then,

$$\begin{aligned} x &= r \cdot \sin \alpha \cdot \sin (A + u) & \frac{dx}{dt} &= C \cdot \sin \alpha \cdot \cos (A + U) \\ y &= r \cdot \sin \beta \cdot \sin (B + u) & \frac{dy}{dt} &= C \cdot \sin \beta \cdot \cos (B + U) \\ z &= r \cdot \sin i \cdot \sin u & \frac{dz}{dt} &= C \cdot \sin i \cdot \cos U \end{aligned}$$

II. Given the rectangular co-ordinates and their differential co-efficients, to find the elements of the orbit.

From the equations

$$\begin{aligned} k\sqrt{p} \cdot \sin i \cdot \sin \Omega &= y \frac{dz}{dt} - z \frac{dy}{dt} \\ k\sqrt{p} \cdot \sin i \cdot \cos \Omega &= x \frac{dz}{dt} - z \frac{dx}{dt} \\ k\sqrt{p} \cdot \cos i &= x \frac{dy}{dt} - y \frac{dx}{dt} \\ &\text{find } k\sqrt{p}, i \text{ and } \Omega \end{aligned}$$

From the equations

$$\begin{aligned} c \cdot r \cdot \sin \psi &= k\sqrt{p} \\ c \cdot r \cdot \cos \psi &= x \frac{dx}{dt} + y \frac{dy}{dt} + z \frac{dz}{dt} \\ &\text{find } cr \text{ and } \psi. \end{aligned}$$

From the equations

$$\begin{aligned} r \cdot \sin u &= -x \cdot \sin \Omega \cdot \sec i + y \cdot \cos \Omega \cdot \sec i \\ r \cdot \cos u &= x \cdot \cos \Omega + y \cdot \sin \Omega \\ &\text{find } r \text{ and } u. \end{aligned}$$

From the values of cr and r find a .

From the equations

$$\begin{aligned} 2a - r &= \frac{r}{\frac{2}{r} \cdot \frac{k^2}{c^2} - 1} \\ 2ae \cdot \sin \omega &= -r \cdot \sin u - (2a - r) \sin (2\psi + u) \\ 2ae \cdot \cos \omega &= -r \cdot \cos u - (2a - r) \cos (2\psi + u) \\ &\text{find } a, e, \omega. \end{aligned}$$

From the equations

$$\begin{aligned} \tan \frac{1}{2} E &= \sqrt{\frac{1-e}{1+e}} \cdot \tan \frac{1}{2} (u - \omega) \\ M &= E - e \cdot \sin E \\ &\text{find } M. \end{aligned}$$

III. When the corrections to the rectangular co-ordinates and to the differential co-efficients are small, the corrections to the elements may be found by differential formulæ.

Let $F = \sin \alpha \cdot \sin (A + u) \cdot \delta x + \sin \beta \cdot \sin (B + u) \cdot \delta y + \sin i \cdot \sin u \cdot \delta z$

$G = \sin \alpha \cdot \cos (A + u) \cdot \delta x + \sin \beta \cdot \cos (B + u) \cdot \delta y + \sin i \cdot \cos u \cdot \delta z$

$H = \cos \alpha \cdot \delta x + \cos \beta \cdot \delta y + \cos i \cdot \delta z$

$F' = \sin \alpha \cdot \sin (A + u) \cdot \delta \frac{dx}{dt} + \sin \beta \cdot \sin (B + u) \cdot \delta \frac{dy}{dt} + \sin i \cdot \sin u \cdot \delta \frac{dz}{dt}$

$G' = \sin \alpha \cdot \cos (A + u) \cdot \delta \frac{dx}{dt} + \sin \beta \cdot \cos (B + u) \cdot \delta \frac{dy}{dt} + \sin i \cdot \cos u \cdot \delta \frac{dz}{dt}$

$H' = \cos \alpha \cdot \delta \frac{dx}{dt} + \cos \beta \cdot \delta \frac{dy}{dt} + \cos i \cdot \delta \frac{dz}{dt}$

Then

$$\begin{aligned} \delta i &= \frac{C \cdot \sin U}{k\sqrt{p}} H + \frac{r \cdot \cos u}{k\sqrt{p}} H' \\ \delta \Omega &= -\frac{C \cdot \cos U}{k\sqrt{p} \cdot \sin i} H + \frac{r \cdot \sin u}{k\sqrt{p} \cdot \sin i} H' \\ \delta \sqrt{p} &= \frac{\sqrt{p}}{r} F - \frac{e \cdot \sin v}{p} G + \frac{r}{k} G' \\ \delta \left(\frac{1}{a} \right) &= -\frac{2}{r^2} F - \frac{2e \cdot \sin v}{k\sqrt{p}} F' - \frac{2\sqrt{p}}{r \cdot k} G' \end{aligned}$$

$$\delta\mu = -\frac{3\mu a}{r^2} F - \frac{3e \sin v}{k\sqrt{p}} \mu a \cdot F' - \frac{3\sqrt{p}}{rk} \mu a \cdot G'$$

$$\delta e = \frac{p \cdot \cos E}{r^2} F + \frac{\sin v}{a} G + \frac{\sin v \sqrt{p}}{k} F' + \frac{\sqrt{p}}{k} (\cos v + \cos E) G'$$

$$\delta\omega + \cos i \cdot \delta\Omega = \frac{\sin v}{er} F - \frac{\cos E}{er} G - \frac{\cos v \sqrt{p}}{ek} F' + \frac{p+r}{e\sqrt{p} \cdot k} \sin v \cdot G'$$

$$\delta M = -\left(\frac{\cot \phi}{r} + \frac{\tan \phi}{a}\right) \sin v \cdot F + \frac{\cos v}{a \cdot \tan \phi} G - \frac{1}{k\sqrt{a}} \left(2r - \frac{p \cdot \cos v}{e}\right) F'$$

$$- \frac{\sin v \sqrt{p}}{k \tan \phi} \left(1 + \frac{r}{p}\right) G'$$

$$\delta\pi = (\delta\omega + \cos i \cdot \delta\Omega) + (1 - \cos i) \delta\Omega$$

Some of these computations are unnecessary, except for the following verifications:

$$H + r \cdot \cos \kappa \cdot \sin i \cdot \delta\Omega - r \cdot \sin \kappa \cdot \delta i = 0$$

$$\delta e = -\frac{p}{2e} \delta \left(\frac{1}{a}\right) - \frac{\sqrt{p}}{ae} \delta \sqrt{p}$$

$$\delta\mu = \frac{3\mu a}{2} \delta \left(\frac{1}{a}\right)$$

$$\delta M = -\frac{(2 + e \cos v) \sin v}{\cos^2 \phi} \times \frac{r^2}{a^2 \cos \phi} \delta e - \frac{r^2}{a^2 \cos \phi} (\delta\omega + \cos i \cdot \delta\Omega)$$

$$+ \frac{r^2}{a^2 \cos \phi} \cdot \frac{G}{r}$$

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ON NEW TABLES OF THE MOON'S PARALLAX,

TO BE

SUBSTITUTED FOR THOSE OF BURCKHARDT;

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THE importance of an accurate knowledge of the Moon's Parallax is very evident. No observation of the Moon's place can be compared with the Tables, or turned to any practical use, without undergoing a preliminary reduction of which the amount of the Parallax is the most important element. Now the same theory by which the angular motion of the Moon round the Earth is determined gives likewise the form of the orbit, and therefore the proportion between the Parallaxes at different times; hence, as the theory is sufficiently perfect to represent the place of the Moon within $10''$, it cannot be doubted that it would be competent to give the variations of the Parallax within a small fraction of a second, provided the mean Parallax were known. To determine this, however, by theory, it is necessary to know, in addition to the elements furnished by observations of the Moon's motion, the ratio of the Moon's mass to that of the Earth. Hence, conversely, if the mean value of the Parallax be deduced from corresponding observations of the Moon's declination, made at distant points on the Earth's surface, one means is afforded of finding the ratio of the masses.

The most recent determination of the Parallax by means of observations of this kind is contained in a paper by Mr. Henderson in the tenth volume of the Memoirs of the Royal Astronomical Society, and is founded on his own observations made at the Cape of Good Hope, combined with corresponding observations at Greenwich and Cambridge. In this paper Mr. Henderson compares the Parallaxes deduced from observation with those calculated by means of the Tables both of Burckhardt and Damoiseau. It is remarkable that he finds a difference of $1''.3$ in the value of the mean Parallax, according as one set of Tables or the other is employed in the comparison, and not knowing which value to prefer, he adopts the mean of the two for his final result.

If we consider, however, that the only part of this process which depends on the Tables consists in the reduction of the actual Parallaxes at the times of observation to the mean value, it is plain that so large a difference in the mean of thirty-four observations can only arise from intolerable errors in the periodic terms of Parallax given by one of the two sets of Tables.

The Parallax in Damoiseau's Tables is given at once in the form in which it is furnished by theory, but that in Burckhardt's Tables is adapted to his peculiar form of the arguments, and requires transformation in order to be compared with the former. When this was done, I found that several of the minor equations of Parallax deduced from Burckhardt differed completely from their theoretical given by Damoiseau.

On further inquiry, I discovered that the difference between Burckhardt's equations of Parallax and those of Bürg and Damoiseau had been long since remarked by Clausen in a comparative analysis of the three sets of Lunar Tables given in the seventeenth volume of the *Astronomische Nachrichten*, but no notice appears to have been taken of this remark.

With regard to the Parallax, Burckhardt professes to have followed the theory of Laplace, but this agrees very closely with that of Damoiseau, so that errors have evidently been committed by him in the transformation of Laplace's formula.

These appear to have originated in the following manner :

In the formation of Burckhardt's Arguments of Evection and Variation, the *mean* Longitude of the Sun is employed. Now four of the errors in the coefficients of the minor equations may be accounted for, by supposing him to have erroneously employed the *true* instead of the *mean* Longitude of the Sun in forming the above-mentioned arguments. In another of these equations, the coefficient is taken with a wrong sign, and in another a wrong argument is employed.

A strange fatality seems to have attended all Burckhardt's calculations respecting the Moon's Parallax. In the *Connaissance des Temps* for the year xv of the Republic, he gives a comparison between the values furnished by Mayer's and Laplace's theories, and he concludes that the error of the former may sometimes amount to 7".

But this difference is caused almost wholly by an error in his own transformation of Laplace's expression. In the formation of Mayer's Arguments of Evection and Variation, the *true* Longitude of the Sun is employed, but Burckhardt appears to have inadvertently used the *mean* Longitude instead of it, an error which is the exact converse of the one above noticed with respect to his own Tables.

After examining Burckhardt's Tables of Parallax, I was naturally led to scrutinize more closely the results of the theories of Damoiseau, Plana, and Pontécoulant, with respect to the same subject. Although the differences between these were very trifling when compared with the errors of Burckhardt, still they were greater than we had a right to expect, considering the close agreement which existed with respect to the equations of longitude. In the theories of Damoiseau and Plana, the expression for the projection of the Moon's radius vector on the Ecliptic in terms of her true longitude is required in order to find the relation between that longitude and *the time*, and therefore no pains have been spared to obtain it with accuracy ; but in the subsequent operations and transformations necessary in order to deduce the expression for the Parallax in terms of the time, the same care has not been employed. In Pontécoulant's theory the time is taken as the independent variable, and consequently the analytical expression for the Parallax in the form required is obtained immediately, and is developed to as great an extent as the corresponding expression for the longitude, yet in the conversion of his formula into numbers he neglects all the terms beyond the fifth order, so that several of the resulting coefficients sensibly in error.

I have endeavoured to supply these defects and omissions.

In the seventeenth volume of the *Astronomische Nachrichten*, M. F. the expression which he has obtained for the logarithm of the sine zontal Parallax, by means of his new method of treating the Lunar Tables

transformed this expression with the care which its great value deserves, so as to compare it with the results of the former theories.

The agreement thus found between the several theories is most satisfactory, the difference of the separate values of each coefficient and the general mean rarely amounting to a hundredth of a second. There are only two instances in which this amount is much exceeded. One of these relates to the constant of Parallax, the value of which, given by M. Hansen's method, is $0''\cdot06$ less than the corresponding value found from the same fundamental data by the other methods, and the second relates to the term whose argument in Damoiseau's notation is $t + z$, the coefficient being $0''\cdot146$ according to Damoiseau and Plana, $0''\cdot140$ according to Pontécoulant, and $0''\cdot181$ according to Hansen.

The values of the constant of Parallax which I have deduced from the theories of Damoiseau, Plana, and Pontécoulant agree perfectly with one another, and from the particular examination which I have given to this subject, I am induced to place considerable reliance on the result. It is possible that M. Hansen's definitive value of the constant may differ slightly from that which he has given in the paper above referred to.

From the value of the constant of Nutation found by M. Peters, it follows that the ratio of the Moon's mass to that of the Earth is as 1 to $81\cdot5$ nearly. Employing this ratio, together with the dimensions of the Earth according to Bessel, and the length of the seconds' pendulum in latitude $35\frac{1}{4}^\circ$, deduced from Mr. Baily's Report on Foster's Pendulum experiments, I find the value of the constant of Parallax to be $3422''\cdot325$.

Now Henderson, in the paper cited above, has found the value of the constant, by comparison with Damoiseau's Tables, to be $3422''\cdot46$.

It should, however, be remarked that what the Tables call the Parallax is more strictly the *sine* of the Parallax converted into seconds of arc. In Henderson's calculations he has taken the tabular quantity to denote the Parallax itself, so that the value found must be diminished by $0''\cdot15$ in order to obtain the constant of the *sine* of the Parallax. Thus the value deduced in this manner is $3422''\cdot31$, a result admirably agreeing with that just derived from theory.

I have carefully transformed the expression for the Parallax given by theory, so as to make it depend on Burckhardt's Arguments of Longitude, and from the resulting formula Mr. Farley has calculated the Tables which are appended to this paper. Constants are added to the several equations so as to render them always positive.

The Minor Equations of Equatorial Horizontal Parallax are comprised in Table I.

Table II. contains the Equation depending on the Argument of Evection ;

Table III. that depending on the Argument of Variation ; and

Table IV. that depending on the Argument of Anomaly.

The formulæ employed in their construction are the following, in which

E denotes Burckhardt's argument of Evection ;

V that of Variation ; and

A of Anomaly ;

Minor Equations are denoted by their numbers as in

$$\begin{aligned}
& 1.46 + 1.46 \cos (\text{Arg. 4.}) \\
& 0.87 + 0.87 \cos (\text{Arg. 5.}) \\
& 0.71 - 0.71 \cos (\text{Arg. 6.}) \\
& 0.11 - 0.11 \cos (\text{Arg. 7.}) \\
& 0.62 - 0.62 \cos (\text{Arg. 8.}) \\
& 1.81 - 0.05 \cos (\text{Arg. 9.}) + 17.81 \cos 2 (\text{Arg. 9.}) \\
& 0.21 - 0.21 \cos (\text{Arg. 12.}) \\
& 0.16 - 0.16 \cos (\text{Arg. 13.}) \\
& 0.14 + 0.14 \cos (\text{Arg. 16.}) \\
& 0.12 + 0.12 \cos (\text{Arg. 23.}) \\
& 0.10 + 0.10 \cos (\text{Arg. 25.}) \\
& 36.81 + 37.22 \cos E + 0''.41 \cos 2 E \\
& 26.18 - 0.94 \cos V + 26.34 \cos 2 V + 0''.16 \cos 4 V. \\
& 55.50.93 + 187.14 \cos A + 10.27 \cos 2 A + 0.64 \cos 3 A + 0''.04 \cos 4 A
\end{aligned}$$

In this formula, a few terms have been neglected, the largest of the coefficients of which does not exceed $0''.08$.

The sum of the constants in this formula is $3422''.29$, slightly differing from what is called the constant of Parallax, in consequence of the change in the form of development.

For the sake of comparison I will here give the formula on which Burckhardt's own Tables are constructed, which is as follows:

$$\begin{aligned}
& 0.4 - 0.4 \cos (\text{Arg. 1.}) \\
& 0.8 + 0.8 \cos (\text{Arg. 2.}) \\
& 0.3 + 0.3 \cos (\text{Arg. 4.}) \\
& 0.8 + 0.8 \cos (\text{Arg. 5.}) \\
& 1.1 + 0.8 \cos (\text{Arg. 6.}) \\
& 0.6 - 0.6 \cos (\text{Arg. 8.}) \\
& 1.8 + 1.8 \cos 2 (\text{Arg. 9.}) \\
& 0.7 + 0.7 \cos (\text{Arg. 12.}) \\
& 1.0 + 1.0 \cos (\text{Arg. 13.}) \\
& 43.0 + 37.4 \cos E + 0''.4 \cos 2 E \\
& 30.0 - 1.0 \cos V + 26.3 \cos 2 V + 0''.3 \cos 3 V \\
& 55.40.0 + 187.0 \cos A + 10.2 \cos 2 A + 0.5 \cos 3 A
\end{aligned}$$

The sum of the constants in this formula is $3420''.5$.

The errors of the coefficients of Equations 2 and 12 arise from the mistake respecting the formation of the Argument of Variation before explained, and those of the coefficients of Equations 4 and 13 from the similar mistake respecting the Argument of Evection.

Equation 6 is taken with a wrong sign, and in the Variation Equation 3 V appears to be wrongly substituted for 4 V, though I find that the corresponding term, when reduced to Burckhardt's form, has a smaller coefficient.

In consequence of the way in which most of these errors amount will be generally greatest in March and September, beginning of January and July, when the Sun's mean and t

The total error of Burckhardt's Tables may amount to near of the change in the value of the constant.

Looking at the accuracy of modern observations, it is easy to imagine to what an extent the value of comparisons between observed and tabular places may be diminished by their being liable to an error of this kind.

In determining differences of longitude by means of occultations, it is plain that the results may be considerably affected by such an error in the Parallax. It has often been remarked that differences of longitude obtained by means of different occultations are not so consistent with each other as might be expected from the precise character of the observation, and I have no doubt that a great part of the discrepancy is to be attributed to the use of an erroneous Parallax.

Mr. Maclear's observations at the Cape, combined with European observations, would doubtless furnish most valuable materials for a new determination of the constant of Parallax, care being of course taken to employ correct Tables in the reductions ; and such a work would be a useful contribution to Astronomy.

In order to facilitate these and similar objects, Mr. Stratford has calculated the Parallaxes from my Tables for each Greenwich mean noon in the years 1840-1855, and has thus obtained the corrections to be applied to the corresponding quantities given in the Nautical Almanac.

These corrections are embodied in Tables which are appended to the present paper. Subsequently to 1855, the Moon's Parallax given in the Nautical Almanac is calculated from my Tables.

TABLE I. OF THE MOON'S EQUATORIAL HORIZONTAL PARALLAX.

Arg.	ARGUMENT:—Arg ^s 1, 2, 4, &c. from calculations of the Moon's Place by Burckhardt.													Arg.
	1	2	4	5	6	7	8	9	12	13	16	23	25	
000	"	"	"	"	"	"	"	"	"	"	"	"	"	1000
010	0'00	3'46	2'92	1'74	0'00	0'00	0'00	3'57	0'00	0'00	0'28	0'24	0'20	990
020	0'00	3'46	2'92	1'74	0'00	0'00	0'00	3'56	0'00	0'00	0'28	0'24	0'20	990
030	0'01	3'45	2'91	1'73	0'01	0'00	0'01	3'51	0'00	0'00	0'28	0'24	0'20	990
040	0'01	3'43	2'89	1'72	0'01	0'00	0'01	3'44	0'00	0'00	0'28	0'24	0'20	990
050	0'01	3'41	2'87	1'71	0'02	0'00	0'02	3'35	0'01	0'01	0'27	0'24	0'20	990
060	0'02	3'38	2'85	1'70	0'03	0'00	0'03	3'23	0'01	0'01	0'27	0'23	0'20	990
070	0'02	3'34	2'82	1'68	0'05	0'01	0'05	3'08	0'02	0'01	0'27	0'23	0'19	990
080	0'03	3'30	2'78	1'66	0'07	0'01	0'06	2'92	0'02	0'02	0'27	0'23	0'19	990
090	0'04	3'25	2'74	1'63	0'09	0'01	0'08	2'74	0'03	0'02	0'26	0'23	0'19	990
100	0'05	3'19	2'69	1'60	0'11	0'02	0'10	2'54	0'03	0'03	0'26	0'22	0'18	990
110	0'06	3'13	2'64	1'57	0'13	0'02	0'12	2'33	0'04	0'03	0'25	0'22	0'18	990
120	0'08	3'06	2'58	1'53	0'16	0'03	0'14	2'11	0'05	0'04	0'25	0'21	0'18	890
130	0'09	2'99	2'52	1'50	0'19	0'03	0'17	1'89	0'06	0'04	0'24	0'21	0'17	890
140	0'11	2'91	2'46	1'46	0'22	0'03	0'20	1'66	0'07	0'05	0'24	0'20	0'17	890
150	0'12	2'83	2'39	1'42	0'26	0'04	0'23	1'44	0'08	0'06	0'23	0'20	0'16	890
160	0'14	2'75	2'32	1'38	0'29	0'04	0'26	1'22	0'09	0'07	0'22	0'19	0'16	890
170	0'16	2'66	2'24	1'34	0'33	0'05	0'29	1'01	0'10	0'07	0'21	0'18	0'16	840
180	0'18	2'56	2'16	1'29	0'37	0'06	0'32	0'82	0'11	0'08	0'21	0'18	0'15	840
190	0'20	2'47	2'08	1'24	0'41	0'06	0'36	0'63	0'12	0'09	0'20	0'17	0'14	820
200	0'22	2'37	2'00	1'19	0'45	0'07	0'39	0'47	0'13	0'10	0'19	0'16	0'14	820
210	0'24	2'27	1'91	1'14	0'49	0'07	0'43	0'33	0'14	0'11	0'18	0'16	0'13	820
220	0'26	2'16	1'82	1'09	0'53	0'08	0'47	0'21	0'16	0'12	0'17	0'15	0'13	790
230	0'28	2'05	1'73	1'03	0'58	0'08	0'50	0'12	0'17	0'13	0'17	0'14	0'12	790
240	0'30	1'95	1'64	0'98	0'62	0'09	0'54	0'05	0'18	0'14	0'16	0'14	0'11	770
250	0'32	1'84	1'55	0'92	0'67	0'10	0'58	0'01	0'20	0'15	0'15	0'13	0'11	760
260	0'34	1'73	1'46	0'87	0'71	0'11	0'62	0'00	0'21	0'16	0'14	0'12	0'10	730
270	0'36	1'62	1'37	0'82	0'75	0'12	0'66	0'02	0'22	0'17	0'13	0'11	0'09	740
280	0'38	1'51	1'28	0'76	0'80	0'12	0'70	0'06	0'24	0'18	0'12	0'11	0'09	730
290	0'40	1'41	1'19	0'71	0'84	0'13	0'74	0'14	0'25	0'19	0'11	0'10	0'08	720
300	0'42	1'30	1'10	0'65	0'89	0'14	0'77	0'24	0'26	0'20	0'10	0'09	0'07	710
310	0'45	1'19	1'01	0'60	0'93	0'14	0'81	0'36	0'28	0'21	0'10	0'08	0'07	700
320	0'47	1'09	0'92	0'55	0'97	0'15	0'85	0'51	0'29	0'22	0'09	0'08	0'06	690
330	0'48	0'99	0'84	0'50	1'01	0'16	0'88	0'68	0'30	0'23	0'08	0'07	0'06	680
340	0'50	0'90	0'76	0'45	1'05	0'16	0'92	0'87	0'31	0'24	0'07	0'06	0'05	670
350	0'52	0'80	0'68	0'41	1'09	0'17	0'95	1'07	0'32	0'25	0'07	0'06	0'05	660
360	0'54	0'71	0'60	0'36	1'13	0'18	0'98	1'28	0'33	0'25	0'06	0'05	0'04	650
370	0'56	0'63	0'53	0'32	1'16	0'18	1'01	1'50	0'34	0'26	0'05	0'04	0'04	640
380	0'57	0'55	0'46	0'27	1'19	0'19	1'04	1'73	0'35	0'27	0'04	0'04	0'03	630
390	0'59	0'47	0'40	0'24	1'23	0'19	1'07	1'96	0'36	0'28	0'04	0'03	0'03	620
400	0'60	0'40	0'34	0'20	1'26	0'19	1'10	2'19	0'37	0'28	0'03	0'03	0'02	610
410	0'62	0'33	0'28	0'17	1'29	0'20	1'12	2'41	0'38	0'29	0'03	0'02	0'02	600
420	0'63	0'27	0'23	0'14	1'31	0'20	1'14	2'62	0'39	0'29	0'02	0'02	0'02	590
430	0'64	0'21	0'18	0'11	1'33	0'21	1'16	2'82	0'39	0'30	0'02	0'01	0'01	580
440	0'65	0'16	0'14	0'08	1'35	0'21	1'18	3'01	0'40	0'31	0'01	0'01	0'01	570
450	0'66	0'12	0'10	0'06	1'37	0'21	1'20	3'18	0'40	0'31	0'01	0'01	0'01	560
460	0'66	0'08	0'07	0'04	1'39	0'21	1'21	3'32	0'41	0'31	0'01	0'01	0'00	550
470	0'67	0'05	0'05	0'03	1'40	0'22	1'22	3'44	0'41	0'31	0'00	0'00	0'00	540
480	0'67	0'03	0'03	0'02	1'41	0'22	1'23	3'54	0'42	0'32	0'00	0'00	0'00	530
490	0'68	0'01	0'01	0'01	1'41	0'22	1'23	3'61	0'42	0'32	0'00	0'00	0'00	520
500	0'68	0'00	0'00	0'00	1'42	0'22	1'24	3'65	0'42	0'32	0'00	0'00	0'00	510
510	0'68	0'00	0'00	0'00	1'42	0'22	1'24	3'67			0'00	0'00	0'00	500
	1	2	4	5	6	7	8				16	23	25	

To be substituted for Burckh

TABLE II. OF THE MOON'S EQUATORIAL HORIZONTAL PARALLAX.

O ^s		I ^s		II ^s		III ^s		IV ^s		V ^s		
<i>l</i>	dir.	<i>l</i>	dir.	<i>l</i>	dir.	<i>l</i>	dir.	<i>l</i>	dir.	<i>l</i>	dir.	
0	I 14.44	I 9.25	O 55.22	O 36.40	O 18.00	O 4.78	0	0	0	0	0	30
1	I 14.43	I 8.91	O 54.64	O 35.75	O 17.45	O 4.47	0	0	0	0	0	29
2	I 14.42	I 8.56	O 54.05	O 35.10	O 16.91	O 4.17	0	0	0	0	0	28
3	I 14.39	I 8.19	O 53.47	O 34.45	O 16.37	O 3.89	0	0	0	0	0	27
4	I 14.35	I 7.82	O 52.88	O 33.81	O 15.84	O 3.61	0	0	0	0	0	26
5	I 14.29	I 7.44	O 52.28	O 33.16	O 15.32	O 3.34	0	0	0	0	0	25
6	I 14.23	I 7.05	O 51.67	O 32.52	O 14.81	O 3.08	0	0	0	0	0	24
7	I 14.15	I 6.65	O 51.07	O 31.88	O 14.30	O 2.83	0	0	0	0	0	23
8	I 14.06	I 6.24	O 50.46	O 31.24	O 13.80	O 2.59	0	0	0	0	0	22
9	I 13.96	I 5.82	O 49.84	O 30.60	O 13.30	O 2.37	0	0	0	0	0	21
10	I 13.85	I 5.39	O 49.22	O 29.96	O 12.81	O 2.15	0	0	0	0	0	20
11	I 13.73	I 4.96	O 48.60	O 29.33	O 12.33	O 1.94	0	0	0	0	0	19
12	I 13.59	I 4.51	O 47.98	O 28.70	O 11.86	O 1.74	0	0	0	0	0	18
13	I 13.44	I 4.06	O 47.35	O 28.07	O 11.40	O 1.56	0	0	0	0	0	17
14	I 13.28	I 3.60	O 46.72	O 27.44	O 10.94	O 1.38	0	0	0	0	0	16
15	I 13.12	I 3.13	O 46.09	O 26.82	O 10.49	O 1.21	0	0	0	0	0	15
16	I 12.94	I 2.65	O 45.45	O 26.20	O 10.05	O 1.05	0	0	0	0	0	14
17	I 12.74	I 2.17	O 44.81	O 25.59	O 9.62	O 0.91	0	0	0	0	0	13
18	I 12.54	I 1.67	O 44.17	O 24.98	O 9.19	O 0.78	0	0	0	0	0	12
19	I 12.33	I 1.17	O 43.53	O 24.37	O 8.78	O 0.65	0	0	0	0	0	11
20	I 12.10	I 0.66	O 42.89	O 23.77	O 8.37	O 0.54	0	0	0	0	0	10
21	I 11.86	I 0.15	O 42.24	O 23.17	O 7.97	O 0.44	0	0	0	0	0	9
22	I 11.61	O 59.63	O 41.60	O 22.57	O 7.58	O 0.35	0	0	0	0	0	8
23	I 11.36	O 59.10	O 40.95	O 21.98	O 7.20	O 0.27	0	0	0	0	0	7
24	I 11.09	O 58.56	O 40.30	O 21.40	O 6.82	O 0.20	0	0	0	0	0	6
25	I 10.81	O 58.02	O 39.65	O 20.82	O 6.46	O 0.14	0	0	0	0	0	5
26	I 10.52	O 57.47	O 39.00	O 20.24	O 6.11	O 0.09	0	0	0	0	0	4
27	I 10.22	O 56.92	O 38.35	O 19.67	O 5.76	O 0.05	0	0	0	0	0	3
28	I 9.90	O 56.36	O 37.70	O 19.11	O 5.43	O 0.02	0	0	0	0	0	2
29	I 9.58	O 55.79	O 37.05	O 18.55	O 5.10	O 0.00	0	0	0	0	0	1
30	I 9.25	O 55.22	O 36.40	O 18.00	O 4.78	O 0.00	0	0	0	0	0	0

ARGUMENT.—The Argument of Direction from calculations of the Moon's Place by BURKHARDT.

To be substituted for Burekhardt's Table XXIX.

ARGUMENT:—The Argument of Variation from calculations of the Moon's Place by Burckhardt.

O'		I'		II'		III'		IV'		V'	
diff.	"	diff.	"	diff.	"	diff.	"	diff.	"	diff.	"
0 51.74	0.02	0 38.46	0.81	0 12.46	0.76	0 00.00	0.03	0 13.40	0.81	0 40.08	0.81
0 51.72	0.05	0 37.65	0.82	0 11.70	0.75	0 00.03	0.06	0 14.21	0.82	0 40.89	0.79
0 51.67	0.08	0 36.83	0.83	0 10.95	0.73	0 00.09	0.10	0 15.03	0.84	0 41.68	0.77
0 51.59	0.11	0 36.00	0.85	0 10.22	0.71	0 00.19	0.13	0 15.87	0.85	0 42.45	0.75
0 51.48	0.15	0 35.15	0.85	0 9.51	0.69	0 00.32	0.15	0 16.72	0.87	0 43.20	0.74
0 51.33	0.18	0 34.30	0.87	0 8.82	0.66	0 00.47	0.19	0 17.59	0.87	0 43.94	0.71
0 51.15	0.20	0 33.43	0.88	0 8.16	0.65	0 00.66	0.22	0 18.46	0.89	0 44.65	0.69
0 50.95	0.24	0 32.55	0.88	0 7.51	0.62	0 00.88	0.25	0 19.35	0.89	0 45.34	0.66
0 50.71	0.28	0 31.67	0.89	0 6.89	0.60	0 01.13	0.28	0 20.24	0.91	0 46.00	0.65
0 50.43	0.30	0 30.78	0.89	0 6.29	0.58	0 01.41	0.30	0 21.15	0.91	0 46.65	0.62
0 50.13	0.33	0 29.88	0.90	0 5.71	0.55	0 01.71	0.34	0 22.06	0.92	0 47.27	0.59
0 49.80	0.37	0 28.98	0.90	0 5.16	0.53	0 02.05	0.37	0 22.98	0.92	0 47.86	0.57
0 49.43	0.39	0 28.08	0.91	0 4.63	0.50	0 02.42	0.40	0 23.90	0.93	0 48.43	0.54
0 49.04	0.43	0 27.17	0.91	0 4.13	0.48	0 02.82	0.43	0 24.83	0.93	0 48.97	0.52
0 48.61	0.45	0 26.26	0.91	0 3.65	0.44	0 03.24	0.45	0 25.75	0.93	0 49.49	0.49
0 48.16	0.48	0 25.35	0.91	0 3.21	0.42	0 03.69	0.48	0 26.68	0.94	0 49.98	0.46
0 47.68	0.48	0 24.45	0.90	0 2.79	0.39	0 04.17	0.51	0 27.62	0.93	0 50.44	0.43
0 47.18	0.50	0 23.54	0.90	0 2.40	0.37	0 04.68	0.53	0 28.55	0.93	0 50.87	0.40
0 46.65	0.53	0 22.64	0.90	0 2.03	0.34	0 05.21	0.56	0 29.48	0.92	0 51.27	0.37
0 46.09	0.56	0 21.74	0.89	0 1.69	0.30	0 05.77	0.58	0 30.40	0.92	0 51.64	0.34
0 45.50	0.59	0 20.85	0.88	0 1.39	0.28	0 06.35	0.61	0 31.32	0.92	0 51.98	0.31
0 44.89	0.63	0 19.97	0.88	0 1.11	0.24	0 06.96	0.63	0 32.24	0.92	0 52.29	0.27
0 44.26	0.65	0 18.22	0.87	0 0.87	0.22	0 07.59	0.65	0 33.16	0.90	0 52.56	0.25
0 43.61	0.68	0 18.22	0.86	0 0.65	0.19	0 08.24	0.68	0 34.06	0.89	0 52.81	0.22
0 42.93	0.70	0 17.36	0.85	0 0.46	0.15	0 08.92	0.70	0 34.95	0.89	0 53.03	0.18
0 42.23	0.72	0 16.51	0.84	0 0.31	0.13	0 09.62	0.72	0 35.84	0.89	0 53.21	0.15
0 41.51	0.73	0 15.67	0.82	0 0.18	0.09	0 10.34	0.74	0 36.71	0.86	0 53.36	0.11
0 40.78	0.73	0 14.85	0.81	0 0.09	0.06	0 11.08	0.74	0 37.57	0.85	0 53.47	0.08
0 40.02	0.76	0 14.04	0.81	0 0.03	0.03	0 11.83	0.78	0 38.42	0.84	0 53.55	0.05
0 39.25	0.77	0 13.24	0.78	0 0.00	0.00	0 12.61	0.78	0 39.26	0.84	0 53.60	0.02

TABLE III. OF THE MOON'S EQUATORIAL HORIZONTAL PARALLAX.

0 30
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To be substituted for Burckhardt's Table XXX.

TABLE IV. OF THE MOON'S EQUATORIAL HORIZONTAL PARALLAX.

O ^s		I ^s		II ^s		III ^s		IV ^s		V ^s		
"	diff.	"	diff.	"	diff.	"	diff.	"	diff.	"	diff.	
30	9.01	58 38.10	2.00	57 18.70	3.15	55 40.69	3.23	54 12.84	2.51	53 13.97	1.33	30
29	8.98	58 36.10	2.06	57 15.55	3.17	55 37.46	3.21	54 10.33	2.47	53 12.64	1.29	29
28	8.87	58 34.04	2.12	57 12.38	3.18	55 34.25	3.20	54 7.86	2.44	53 11.35	1.25	28
27	8.69	58 31.92	2.17	57 9.20	3.20	55 31.05	3.18	54 5.42	2.40	53 10.10	1.20	27
26	8.44	58 29.75	2.22	57 6.00	3.22	55 27.87	3.17	54 3.02	2.36	53 8.90	1.16	26
25	8.11	58 27.53	2.27	57 2.78	3.23	55 24.70	3.15	54 0.66	2.33	53 7.74	1.11	25
24	7.72	58 25.26	2.32	56 59.55	3.24	55 21.55	3.13	53 58.33	2.30	53 6.63	1.07	24
23	7.26	58 22.94	2.36	56 56.31	3.26	55 18.42	3.12	53 56.03	2.26	53 5.56	1.02	23
22	6.73	58 20.58	2.42	56 53.05	3.26	55 15.30	3.10	53 53.77	2.22	53 4.54	0.98	22
21	6.13	58 18.16	2.46	56 49.79	3.28	55 12.20	3.08	53 51.55	2.19	53 3.56	0.94	21
20	5.45	58 15.70	2.50	56 46.51	3.28	55 9.12	3.06	53 49.36	2.14	53 2.62	0.89	20
19	4.71	58 13.20	2.55	56 43.23	3.29	55 6.06	3.03	53 47.22	2.11	53 1.73	0.85	19
18	3.90	58 10.65	2.59	56 39.94	3.30	55 3.03	3.01	53 45.11	2.08	53 0.88	0.80	18
17	3.02	58 8.06	2.63	56 36.64	3.31	55 0.02	2.99	53 43.03	2.03	53 0.08	0.75	17
16	2.07	58 5.43	2.67	56 33.33	3.30	54 57.03	2.97	53 41.00	1.99	52 59.33	0.71	16
15	1.05	58 2.76	2.72	56 30.03	3.31	54 54.06	2.94	53 39.01	1.96	52 58.62	0.67	15
14	59.97	58 0.04	2.75	56 26.72	3.31	54 51.12	2.92	53 37.05	1.92	52 57.95	0.62	14
13	58.82	57 57.29	2.78	56 23.41	3.31	54 48.20	2.89	53 35.13	1.87	52 57.33	0.57	13
12	57.60	57 54.51	2.82	56 20.10	3.31	54 45.31	2.86	53 33.26	1.84	52 56.76	0.53	12
11	56.31	57 51.69	2.85	56 16.79	3.31	54 42.45	2.84	53 31.42	1.79	52 56.23	0.48	11
10	54.97	57 48.84	2.89	56 13.48	3.31	54 39.61	2.81	53 29.63	1.75	52 55.75	0.44	10
9	53.56	57 45.95	2.92	56 10.17	3.30	54 36.80	2.78	53 27.88	1.72	52 55.31	0.39	9
8	52.08	57 43.03	2.95	56 6.87	3.30	54 34.02	2.76	53 26.16	1.67	52 54.92	0.34	8
7	50.55	57 40.08	2.98	56 3.57	3.30	54 31.26	2.72	53 24.49	1.63	52 54.58	0.30	7
6	48.95	57 37.10	3.00	56 0.27	3.28	54 28.54	2.70	53 22.86	1.59	52 54.28	0.25	6
5	47.29	57 34.10	3.03	55 56.99	3.28	54 25.84	2.66	53 21.27	1.54	52 54.03	0.21	5
4	45.57	57 31.07	3.06	55 53.71	3.27	54 23.18	2.64	53 19.73	1.51	52 53.82	0.16	4
3	43.79	57 28.01	3.08	55 50.44	3.26	54 20.54	2.60	53 18.22	1.46	52 53.66	0.12	3
2	41.95	57 24.93	3.11	55 47.18	3.25	54 17.94	2.57	53 16.76	1.42	52 53.54	0.07	2
1	40.06	57 21.82	3.12	55 43.93	3.24	54 15.37	2.53	53 15.34	1.37	52 53.47	0.02	1
0	38.10	57 18.70		55 40.69		54 12.84		53 13.97		52 53.45		0

Argument:—The Argument of Anomaly from calculations of the Moon's Place by Burekhardt.

Year	Area	Population	Area	Population
1950	1,000	100,000	1,000	100,000
1955	1,000	100,000	1,000	100,000
1960	1,000	100,000	1,000	100,000
1965	1,000	100,000	1,000	100,000
1970	1,000	100,000	1,000	100,000
1975	1,000	100,000	1,000	100,000
1980	1,000	100,000	1,000	100,000
1985	1,000	100,000	1,000	100,000
1990	1,000	100,000	1,000	100,000
1995	1,000	100,000	1,000	100,000
2000	1,000	100,000	1,000	100,000
2005	1,000	100,000	1,000	100,000
2010	1,000	100,000	1,000	100,000
2015	1,000	100,000	1,000	100,000
2020	1,000	100,000	1,000	100,000

T A B L E S

CONTAINING

CORRECTIONS TO BE APPLIED TO THE VALUES OF THE MOON'S
EQUATORIAL HORIZONTAL PARALLAX GIVEN IN THE NAUTICAL
ALMANACS 1840-1855, IN ORDER TO MAKE THEM AGREE WITH
THOSE CALCULATED FROM MR. ADAMS' TABLES.

1840.

	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	+3.2	-0.3	-3.0	-2.2	+0.3	+2.1	+3.4	+2.2	+0.2	"	"
2	2.5	0.6	1.4	3.7	2.0	0.9	3.3	1.8	-0.7	2.8	2.8
3	2.1	0.7	3.5	3.6	1.7	1.6	3.4	3.3	1.1	1.5	2.4
4	2.1	-0.1	3.1	3.0	0.8	2.1	3.4	2.9	0.6	1.8	1.8
5	2.4	0.0	2.7	2.1	-0.2	2.4	3.3	2.5	0.5	1.4	-0.5
6	2.4	+0.1	2.3	1.1	+0.6	2.5	3.2	2.1	0.6	-0.7	+0.9
7	2.4	0.4	1.6	-0.3	0.9	2.2	2.8	2.2	1.5	+0.9	2.0
8	2.0	0.4	-0.9	+0.4	1.4	2.2	2.8	2.2	2.6	2.2	2.7
9	1.2	0.8	0.0	1.0	1.6	2.2	2.6	2.7	3.5	3.4	3.4
10	0.7	0.8	+0.3	1.4	1.8	2.3	2.7	3.3	4.2	4.3	3.9
11	0.3	1.3	1.0	1.8	1.9	2.2	2.6	3.6	4.5	4.2	3.8
12	0.3	1.7	1.4	2.2	2.1	2.2	2.6	4.4	4.4	4.4	4.4
13	0.6	2.0	2.0	2.5	2.1	2.0	2.4	3.3	3.6	4.2	3.8
14	0.8	2.2	2.0	2.5	2.1	1.6	2.0	2.8	2.9	4.0	4.0
15	1.2	2.2	2.5	2.7	1.9	1.2	1.7	2.2	2.2	3.2	3.6
16	1.1	2.3	2.6	2.8	2.0	1.0	1.2	1.3	1.2	2.8	3.5
17	1.3	2.6	2.8	3.1	1.7	0.8	0.9	0.7	0.2	2.4	3.6
18	1.3	2.9	3.0	3.4	2.0	+0.4	-0.7	0.2	2.4	2.6	3.3
19	1.4	3.5	3.5	3.8	2.1	1.0	-0.1	0.3	2.6	3.7	3.1
20	1.9	4.2	4.0	4.4	2.5	1.1	0.7	1.2	0.4	2.8	3.6
21	2.3	5.0	4.8	4.7	3.1	1.0	1.0	1.1	0.4	3.0	3.3
22	2.8	5.4	5.3	5.2	3.4	1.0	1.0	0.9	1.5	3.2	3.1
23	3.4	5.4	5.7	5.3	3.7	0.8	-0.2	1.7	3.1	2.7	0.9
24	3.8	5.2	5.9	5.3	3.5	0.8	0.5	2.0	3.0	2.1	0.4
25	3.9	4.6	5.8	4.9	3.4	0.9	-0.1	2.2	2.8	1.3	0.1
26	3.9	3.7	5.3	4.5	3.8	0.8	0.2	2.3	2.5	0.9	0.3
27	3.7	2.6	4.5	3.0	1.8	0.6	0.7	1.8	2.3	1.9	0.6
28	3.2	1.3	3.5	1.4	0.7	1.3	1.2	2.0	1.3	1.3	0.7

Day of the Month

1842.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
1	+0.6	+3.5	+4.8	+5.2	+3.7	+1.4	+0.4	+1.5	+4.0	+6.3	+6.4	+4.7
2	0.8	3.9	5.2	4.9	3.3	1.2	0.4	1.4	3.9	6.0	5.3	3.9
3	1.5	4.0	5.4	4.7	3.0	0.7	0.1	1.1	3.5	5.2	4.2	3.3
4	1.9	3.9	5.3	4.3	2.5	0.4	-0.1	0.9	2.7	4.3	3.3	2.6
5	2.5	3.9	5.1	3.7	1.9	0.3	0.3	0.8	2.2	3.0	2.4	1.9
6	2.8	3.4	4.6	3.1	1.8	0.3	0.4	0.5	1.2	1.8	1.7	1.5
7	3.0	3.2	4.1	2.8	1.7	0.2	0.4	0.2	0.5	1.1	1.5	1.4
8	3.1	3.0	3.5	2.9	1.9	0.5	-0.3	0.1	0.3	0.7	1.0	1.0
9	3.4	2.8	3.2	2.8	1.9	0.8	0.0	0.2	0.2	0.6	0.7	0.6
10	3.3	2.7	3.2	3.0	2.2	1.1	+0.5	0.5	0.3	0.5	0.5	+0.3
11	3.2	2.6	3.0	3.2	2.2	1.6	1.1	0.6	0.7	0.6	+0.2	0.0
12	3.0	2.6	3.0	3.0	2.6	2.3	1.6	1.3	1.1	0.5	-0.2	-0.4
13	2.9	2.2	3.0	2.9	2.7	2.6	2.1	1.7	1.3	0.4	0.4	0.4
14	2.6	1.7	2.7	2.5	2.6	2.9	2.4	2.3	1.4	0.2	0.5	0.4
15	2.5	1.3	2.2	1.8	2.4	2.7	2.6	2.4	1.4	+0.2	0.6	-0.2
16	2.2	+0.4	1.5	1.0	2.1	2.3	2.7	2.8	1.6	-0.1	0.6	+0.1
17	1.9	-0.8	+0.7	+0.1	1.4	1.9	3.0	2.9	1.5	0.1	0.5	0.5
18	1.7	-0.5	-0.9	+0.6	1.8	3.1	3.2	3.1	1.3	0.2	0.6	0.8
19	3.6	1.5	1.8	-0.2	2.0	3.6	3.1	0.8	0.3	0.9	0.7	0.7
20	1	2.7	2.4	0.4	2.5	3.9	2.9	+0.5	0.9	1.2	0.7	0.7
21	9	3.4	2.4	-0.3	2.9	4.1	2.1	-0.1	1.1	1.0	1.2	1.2
22	3.1	3.6	1.9	+0.5	3.4	3.7	1.6	0.5	1.1	-0.5	1.2	1.2
23	0.7	3.2	-0.9	1.5	3.6	3.1	0.9	0.5	0.8	+0.5	2.6	2.6
24	0.8	2.1	+0.3	2.2	3.2	2.3	0.4	-0.2	-0.3	2.0	3.3	3.3
25	2.1	-0.6	1.5	2.8	2.5	1.6	0.0	+0.5	1.2	3.4	3.8	3.8
26	1.4	3.0	+0.7	2.5	3.0	1.9	0.8	0.4	1.7	2.8	4.5	3.8
27	2.1	3.5	1.9	3.2	2.9	1.3	0.5	0.7	3.2	4.4	5.4	3.5
28	2.5	4.2	3.1	3.6	2.6	0.9	0.3	1.7	4.4	5.6	5.7	3.6
29	2.7	3.9	3.9	2.4	0.7	0.6	2.8	5.4	6.7	5.5	3.2	3.2
30	0	4.7	+3.9	2.0	+0.4	0.9	3.3	+6.2	7.0	+5.3	2.9	2.9
31	0	4.9	+4.9	+1.8	+1.8	+1.2	+3.9	+6.7	+6.7	+2.5	+2.5	+2.5

1843.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
1	+2.0	+0.2	-0.1	+0.8	+2.5	+3.4	+2.9	+2.2	+0.3	-1.1	-1.0	-0.4
2	1.6	0.0	0.0	1.0	2.6	3.6	3.5	2.4	0.8	0.6	0.6	-0.1
3	1.3	-0.2	0.0	1.0	2.6	3.6	3.6	2.5	1.2	-0.1	-0.3	+0.4
4	1.0	0.3	0.0	1.2	2.6	3.3	3.7	2.5	1.5	+0.5	+0.3	0.9
5	0.5	0.4	0.0	0.9	2.4	2.8	3.3	2.3	2.0	0.9	1.0	1.5
6	0.5	0.5	0.0	+0.3	1.6	2.4	2.9	2.3	2.4	1.3	1.2	2.1
7	+0.5	1.0	0.3	-0.3	0.8	1.7	2.5	2.5	2.6	1.3	1.3	2.4
8	0.5	1.2	0.8	0.9	+0.3	1.0	1.9	2.8	2.3	1.4	1.6	2.5
9	-0.5	1.1	1.1	1.3	-0.1	0.8	1.8	2.7	2.1	1.4	1.7	2.4
10	0.7	0.9	1.5	1.1	-0.1	1.0	2.0	2.3	1.5	1.3	1.9	2.4
11	0.5	-0.4	1.5	-0.5	+0.4	1.1	2.0	1.6	1.3	1.4	2.3	2.5
12	-0.5	+0.8	-1.0	+0.6	1.1	1.2	1.5	1.2	1.1	1.6	3.0	2.7
13	0.0	2.5	+0.1	2.2	1.6	1.0	1.0	0.6	1.4	2.4	3.7	3.1
14	+0.9	4.0	1.8	3.5	2.0	0.8	+0.5	0.3	1.8	3.3	4.6	3.5
15	2.0	5.5	3.7	4.2	2.4	0.4	0.0	0.3	2.9	4.5	5.3	3.8
16	2.8	6.2	5.4	4.5	2.5	0.2	-0.3	0.9	4.0	5.5	5.8	3.6
17	3.4	6.4	6.2	4.8	2.2	0.3	-0.3	1.5	4.9	6.3	6.1	3.4
18	3.7	6.4	6.5	4.8	2.3	+0.3	+0.1	2.2	5.5	6.7	5.8	2.9
19	4.1	6.3	6.5	4.7	2.3	-0.1	0.5	3.1	5.8	6.8	5.2	2.3
20	4.2	5.7	6.5	4.3	1.8	0.1	0.8	3.6	5.5	6.2	4.3	1.4
21	4.5	5.2	6.2	4.0	1.4	0.3	1.4	3.6	4.9	5.4	3.1	0.7
22	4.4	4.3	5.5	3.0	1.1	0.6	1.7	3.4	3.9	4.4	1.7	+0.3
23	4.2	3.5	4.6	2.1	0.7	0.6	2.0	2.9	3.0	+0.3	-0.2	-0.2
24	3.6	2.5	3.7	1.3	0.5	0.9	1.9	2.4	1.7	+1.4	-0.7	0.2
25	3.0	1.8	2.6	0.8	0.6	1.3	1.9	1.4	1.4	+0.7	-0.2	-0.2
26	2.3	0.8	1.6	0.6	1.0	1.7	1.5	0.8	1.4	1.5	+0.1	+0.1
27	1.8	0.4	0.8	0.8	1.4	2.1	1.2	+0.2	1.4	2.0	1.2	0.3
28	1.4	+0.1	0.3	1.1	2.0	2.3	1.2	-0.1	1.9	2.2	1.2	0.4
29	0.9	0.1	1.6	2.3	2.6	2.3	1.1	0.3	1.9	2.1	1.0	0.7
30	0.6	0.2	+2.0	3.1	+2.7	1.5	0.3	-1.6	1.8	-0.6	0.6	0.6
31	+0.4	+0.5	+3.2	+1.7	+0.1	+1.7	-0.1	-1.4	-1.4	+0.9	+0.9	+0.9

1845.

Day of the Month	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	+0.5	-0.5	+0.4	+0.7	+2.0	+2.8	+2.6	+0.8	-1.1	-2.0	-1.5	+1.0
2	0.4	0.8	0.0	-0.3	1.5	2.7	2.2	0.6	1.4	2.5	1.4	1.3
3	0.5	0.9	-0.6	0.6	1.4	2.4	1.9	+0.2	1.7	2.6	-0.9	1.7
4	0.7	0.8	1.2	-0.4	1.7	2.2	1.7	-0.2	1.7	2.3	+0.2	2.1
5	0.6	-0.2	1.4	+0.2	1.7	1.8	1.4	0.1	1.4	1.5	1.2	2.4
6	0.8	+0.4	1.0	0.9	1.7	1.8	1.1	-0.3	-0.5	-0.1	2.1	2.6
7	1.0	1.1	-0.1	1.5	1.8	1.4	0.7	0.0	+1.0	+1.5	3.0	2.7
8	1.3	2.0	+1.0	1.9	1.7	0.8	0.6	+0.6	2.4	2.8	3.5	2.9
9	1.4	2.8	1.8	2.3	1.7	0.8	0.7	1.7	3.8	4.2	4.1	2.7
10	1.7	3.6	2.6	2.4	1.1	+0.5	0.6	2.3	5.0	5.2	4.6	3.0
11	2.1	4.2	3.2	2.3	0.8	-0.1	1.1	3.1	5.9	5.9	5.0	2.8
12	2.7	4.1	3.8	1.8	+0.3	0.3	1.1	4.1	6.4	6.4	4.9	2.6
13	3.4	4.0	3.6	1.2	-0.2	0.9	1.3	4.7	6.7	6.6	4.7	2.1
14	3.3	3.5	3.3	+0.7	1.0	1.1	1.6	5.0	6.8	6.4	3.8	1.6
15	3.4	3.2	2.9	-0.2	1.5	1.1	1.9	5.5	6.2	5.8	2.9	0.8
16	3.3	2.6	2.3	0.8	2.1	0.9	2.2	5.4	5.3	4.9	1.8	+0.3
17	2.8	2.3	1.2	1.2	2.1	-0.1	3.0	4.8	4.3	3.6	0.8	-0.2
18	2.6	2.0	0.9	1.0	1.7	+1.0	3.4	3.8	3.0	2.1	0.2	0.3
19	2.5	2.2	0.8	-0.4	-0.7	2.1	3.3	3.0	1.8	1.2	0.0	-0.3
20	2.5	2.7	0.9	+0.7	+0.5	2.6	2.8	1.9	1.2	0.8	0.3	+0.2
21	2.7	3.4	1.5	1.8	1.8	2.9	2.3	1.3	0.6	0.5	0.5	0.7
22	3.0	3.5	3.0	3.0	2.9	2.8	1.9	1.0	0.4	0.5	1.1	1.0
23	3.1	3.4	3.2	3.8	3.8	3.8	1.7	0.9	0.6	0.7	1.3	1.1
24	2.9	3.2	3.5	4.3	4.1	3.0	1.8	1.0	0.6	0.8	1.3	1.6
25	2.5	2.5	3.8	4.7	4.4	3.3	2.0	1.1	0.5	1.1	1.3	1.8
26	1.9	2.1	3.8	4.5	4.5	3.6	2.3	1.0	0.4	0.9	1.2	2.1
27	1.3	1.5	3.9	4.6	4.6	3.6	2.5	0.8	+0.3	+0.5	1.0	2.4
28	0.5	+1.1	4.4	4.4	4.4	3.4	2.8	0.8	0.2	0.2	0.2	2.4

1844.

Day of the Month	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	+1.3	+2.9	+2.1	+1.8	+1.1	+0.9	+0.4	+1.0	+2.4	+3.0	+3.0	+1.9
2	2.0	3.7	2.9	3.2	2.2	0.9	0.1	0.9	2.4	3.1	3.5	2.2
3	2.5	4.5	3.9	4.5	2.8	0.8	0.2	1.0	2.9	3.4	3.6	2.3
4	3.1	5.0	4.9	4.9	3.1	1.1	0.5	1.5	3.2	3.9	3.7	2.2
5	3.7	5.0	5.6	5.2	3.2	1.2	0.9	2.0	3.7	4.2	3.6	2.0
6	3.9	4.9	5.8	5.1	3.0	1.8	1.4	2.4	3.9	4.1	3.1	1.9
7	3.7	4.5	5.7	4.7	3.2	2.0	1.7	2.9	3.8	3.9	2.4	1.7
8	3.4	4.0	5.5	4.1	3.1	2.1	2.1	3.1	3.5	3.1	1.4	1.5
9	3.1	3.5	4.8	3.4	2.8	2.2	2.3	3.1	2.6	1.8	+0.8	1.3
10	2.7	2.7	3.8	2.5	2.4	2.4	2.5	3.1	1.7	+0.7	-0.1	0.6
11	2.5	1.9	2.8	1.7	1.9	2.4	2.9	2.7	+0.4	-0.6	0.9	0.3
12	2.1	-0.3	+0.4	0.4	1.4	2.9	3.1	1.2	1.9	2.6	1.9	0.2
13	1.6	1.1	-0.5	0.2	1.8	3.1	3.1	+0.1	2.7	3.2	1.9	0.6
14	0.9	1.5	1.1	0.4	2.2	3.5	2.8	-0.4	3.0	3.4	1.5	1.1
15	0.2	1.6	1.2	0.6	2.3	3.6	2.3	1.2	2.9	2.8	0.9	1.3
16	+0.3	1.4	1.0	1.1	2.9	3.6	1.9	1.0	2.2	2.3	-0.2	1.9
17	0.5	0.8	-0.5	1.6	3.2	3.3	1.4	1.0	1.2	1.3	+0.8	2.2
18	0.5	-0.4	+0.2	2.1	3.4	3.0	1.2	-0.1	-0.4	-0.4	1.4	2.3
19	0.3	+0.2	0.6	2.3	3.3	2.6	1.4	+0.7	+0.8	+0.8	2.2	2.5
20	-0.1	0.7	1.1	2.6	3.1	2.4	1.5	1.3	1.6	1.9	2.7	2.8
21	+0.2	1.3	1.5	2.5	2.8	2.1	1.9	1.9	2.6	3.0	3.2	2.8
22	0.7	1.7	1.8	2.2	2.2	1.5	1.9	2.4	3.6	3.8	3.5	3.1
23	0.9	1.9	1.8	1.7	1.4	0.9	1.9	2.8	4.5	4.6	3.7	2.7
24	1.4	2.0	1.8	+0.9	+0.5	0.6	2.0	3.2	4.9	4.7	3.2	2.8
25	1.5	1.9	1.5	-0.1	-0.4	+0.1	1.8	3.9	4.8	4.6	3.0	2.2
26	1.7	1.7	0.9	0.7	0.9	-0.1	1.8	3.9	4.8	4.1	2.4	1.9
27	1.7	1.7	0.5	1.1	1.1	+0.2	2.2	3.8	4.1	3.6	2.1	1.5

Day of the Month

1840.

1847.

Day of the Month

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	+3.9	+4.5	+4.1	+2.1	+0.4	-0.2	+1.4	+4.5	+6.8	+4.7	+2.3
2	3.6	3.9	4.1	1.6	+0.1	0.0	1.8	4.6	6.5	3.9	2.2
3	3.7	3.3	3.8	1.0	-0.2	2.2	4.7	6.3	5.8	2.8	1.6
4	3.2	2.4	3.1	+0.3	0.5	0.3	2.1	4.6	4.5	1.6	0.9
5	2.8	1.5	2.3	-0.1	0.6	2.4	4.8	4.2	2.8	+0.4	0.4
6	2.2	0.8	1.3	-0.4	-0.3	1.3	2.8	4.5	2.4	-0.5	0.2
7	1.6	0.5	0.6	+0.1	+0.5	2.1	3.3	3.7	+0.5	1.0	0.1
8	1.6	0.3	0.3	0.6	1.5	3.0	3.8	2.4	-1.0	1.7	1.2
9	1.2	0.6	0.2	1.7	2.7	3.9	3.7	1.3	2.2	2.3	0.7
10	1.1	0.8	0.8	3.0	3.8	4.4	3.4	-0.2	2.4	-0.3	1.6
11	0.8	1.2	1.5	4.0	4.7	4.7	2.7	0.8	2.5	2.0	+0.5
12	0.6	1.3	2.4	4.7	5.2	4.8	2.1	1.2	2.1	1.5	2.3
13	0.5	1.4	3.1	5.0	5.5	4.6	1.6	0.8	1.6	0.9	1.5
14	+0.3	1.3	3.4	5.2	5.5	4.4	1.4	0.7	1.0	-0.3	1.8
15	0.0	1.4	3.6	4.8	5.5	4.0	1.5	-0.3	0.8	+0.2	2.0
16	-0.2	1.1	3.4	4.6	5.1	3.5	1.4	0.0	0.4	0.5	2.1
17	0.0	0.8	3.0	4.0	4.5	2.7	1.3	0.0	-0.1	0.5	2.0
18	+0.1	0.7	2.6	3.5	3.6	1.9	1.3	0.0	+0.1	0.9	1.7
19	0.2	0.5	2.0	2.2	2.4	1.2	1.0	+0.3	0.2	0.9	1.5
20	0.6	0.3	1.3	1.3	1.1	0.8	0.7	0.4	0.4	0.9	1.3
21	0.5	0.2	0.9	+0.1	+0.3	0.4	0.6	0.5	0.6	0.9	1.1
22	0.5	0.3	0.3	-0.8	-0.4	0.3	0.7	0.7	0.9	1.0	1.1
23			1.1	0.5	0.4	0.6	1.0	1.4	1.2	1.6	2.1
24			1	0.6	0.2	0.7	1.2	2.0	1.7	2.2	1.8
25			8	0.5	0.2	0.9	1.9	3.0	3.5	2.5	1.7
26			4	0.3	0.2	0.9	2.6	4.0	3.4	2.7	1.0
27			1.2	0.2	0.3	1.6	3.6	4.8	4.2	2.6	0.5
28			0.5	0.2	0.5	2.0	4.5	5.8	4.8	2.6	0.4
29			0	0.7	0.1	0.8	2.9	5.4	6.6	5.4	2.4
30			2.1	+0.6	0.0	1.2	3.2	6.1	6.9	5.1	2.4
31			2.4	-0.1		+1	+6.6		+5.0		+0.7

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	+0.9	+1.1	+1.8	+4.4	+5.6	+3.9	+1.1	-1.4	-2.2	-1.5	+1.4
2	0.9	1.4	2.3	4.5	5.3	3.1	0.9	1.0	-1.0	-0.2	2.1
3	0.7	1.5	2.7	4.5	4.6	2.4	1.0	-0.5	+0.2	+0.9	2.5
4	0.6	1.6	2.9	3.8	3.6	2.1	0.9	+0.3	1.4	1.9	2.7
5	0.8	1.7	2.8	3.1	2.8	1.5	0.9	0.9	2.3	2.4	2.6
6	1.1	1.8	2.7	2.1	1.8	0.9	1.6	1.6	3.0	2.9	2.5
7	1.5	1.9	2.3	+1.1	+0.7	+0.3	0.8	2.1	3.3	3.0	2.3
8	2.1	1.8	1.9	-0.1	-0.3	-0.5	0.6	2.5	3.6	2.9	1.8
9	2.5	1.6	1.1	1.1	1.2	1.1	0.7	3.0	3.6	2.7	1.4
10	2.6	1.3	+0.3	2.0	2.2	1.4	0.8	3.4	3.7	2.4	1.1
11	2.9	1.2	-0.3	2.5	2.8	1.4	1.3	3.5	3.4	2.5	1.1
12	2.9	1.2	0.8	2.5	2.9	1.0	1.9	3.5	3.4	2.3	1.1
13	2.9	1.6	1.2	2.2	2.7	-0.1	2.2	3.6	3.4	2.6	1.4
14	2.9	2.2	0.8	1.7	2.0	+0.5	2.4	3.5	3.7	2.8	1.8
15	3.0	3.1	0.2	0.8	1.1	0.9	2.6	3.7	4.1	3.3	2.3
16	3.3	3.5	+0.8	-0.2	-0.3	1.6	2.8	4.0	4.8	3.7	2.6
17	3.6	4.0	1.6	+0.7	+0.6	2.2	3.0	4.2	4.6	4.0	2.9
18	3.7	4.0	2.3	1.7	1.5	2.5	3.4	4.3	4.7	4.1	3.0
19	3.8	3.7	2.6	2.3	2.2	2.8	3.5	4.5	4.6	4.2	3.3
20	3.6	3.3	3.0	2.8	2.4	2.9	3.6	4.3	4.0	4.1	3.4
21	3.2	2.7	3.3	2.7	2.4	2.8	3.6	3.7	3.6	3.9	3.2
22	2.7	2.1	3.2	2.6	2.4	2.9	3.3	3.0	3.1	3.4	2.5
23	1.8	1.3	2.6	2.2	2.3	2.9	3.0	2.4	2.3	2.8	1.7
24	0.9	0.6	2.2	1.9	2.4	2.9	2.6	1.8	+0.8	1.5	1.0
25	+0.2	0.3	1.6	2.1	2.8	3.0	2.2	+0.1	0.4	0.4	2.2
26	-0.1	0.3	1.2	2.6	3.3	3.1	1.8	-0.1	1.8	-1.2	0.6
27	0.5	0.7	1.3	3.2	3.9	3.0	1.2	1.1	3.1	2.0	0.9
28	-0.3	+1.0	1.6	4.0	4.4	2.8	+0.3	2.3	3.7	1.9	1.5
29	+0.3		2.2	4.9	4.8	2.3	-0.3	3.2	3.4	1.3	2.0
30	0.5		3.0	5.3	5.0	+1.6	1.3	3.2	3.4	1.3	2.0
31	+1.0		3.8	+4.6	+4.6	-1.6	-3.0	-3.0	-2.4	-0.4	+3.1

1849.

Day of the Month.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	+2.3	+2.2	+4.2	+2.2	+1.8	+0.3	-0.1	+0.4	+1.4	+1.6	+1.1	+1.7
2	2.5	1.5	2.8	+0.9	0.8	0.1	+0.1	1.1	1.1	+0.8	+0.1	+0.7
3	2.6	1.0	1.5	-0.2	+0.1	0.3	0.6	1.4	0.9	0.0	-0.7	-0.2
4	2.6	0.8	+0.6	0.6	-0.2	0.5	1.2	1.4	0.3	-0.7	1.0	0.8
5	2.7	0.8	-0.3	0.7	-0.2	0.8	1.5	1.4	0.1	1.2	1.1	0.8
6	3.2	1.2	0.5	0.4	0.5	0.0	1.1	1.3	0.6	0.8	-0.6	-0.5
7	3.3	1.3	0.4	0.5	+0.1	1.0	1.8	1.3	0.6	-0.3	0.0	0.0
8	3.4	1.6	-0.1	0.4	+0.1	0.9	1.7	1.6	1.7	+0.7	+0.6	+0.6
9	3.3	1.4	+0.5	0.5	0.0	1.1	1.8	2.2	3.1	1.9	1.2	0.7
10	2.9	1.1	0.4	0.7	-0.2	1.0	2.0	3.2	4.2	2.6	1.8	0.9
11	2.1	0.9	+0.2	0.8	0.4	1.3	2.5	4.4	4.9	3.2	1.9	1.1
12	1.9	0.9	0.1	1.0	0.4	1.4	3.1	5.3	5.1	3.6	2.2	1.2
13	1.6	0.8	0.2	1.1	0.3	1.8	3.9	5.5	5.1	3.6	2.2	1.3
14	1.6	0.7	0.2	1.0	-0.1	1.9	4.4	5.5	4.6	3.5	2.0	1.4
15	1.7	0.4	0.5	1.0	0.1	2.1	4.4	5.0	3.7	3.1	1.7	1.6
16	1.6	0.4	0.5	0.7	0.2	2.2	4.3	4.2	3.0	2.6	1.7	2.0
17	1.2	0.3	0.5	0.7	0.2	2.4	3.9	3.2	2.1	1.9	1.7	2.2
18	0.5	0.4	0.4	-0.3	0.6	2.5	3.4	2.1	1.2	1.5	1.9	2.7
19	0.8	0.5	-0.3	+0.4	1.2	2.9	2.7	1.3	0.6	1.5	2.3	3.3
20	1.0	1.1	+0.1	1.2	2.0	2.0	2.0	+0.4	0.1	1.2	3.0	3.0
21	0.5	2.0	0.9	1.5	3.0	2.8	0.9	-0.3	0.2	1.6	3.5	3.9
22	0.7	2.9	1.7	3.8	4.0	2.6	0.5	0.6	0.4	2.2	3.9	4.0
23	1.3	3.8	3.0	5.2	4.7	2.2	+0.1	0.9	0.6	2.6	4.5	3.7
24	1.8	4.6	4.4	6.5	5.1	2.1	-0.1	0.8	1.0	3.2	4.6	3.1
25	1.9	5.1	5.5	7.1	5.2	1.9	0.4	0.6	1.4	3.7	4.2	3.0
26	2.8	5.4	6.5	7.5	4.8	1.4	0.6	0.6	1.6	3.9	4.0	2.8
27	2.9	5.5	7.2	6.9	4.4	1.0	0.7	-0.2	1.9	3.8	3.8	3.0
28	3.1	+5.2	7.4	6.2	3.7	+0.5	0.8	+0.1	2.0	3.5	3.6	3.1

1848.

B.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
2	2.8	+1.0	-0.5	-2.1	-1.1	+1.1	+2.5	+3.2	+2.4	+1.2	+1.4	+1.7
3	2.4	0.9	0.8	-0.5	+0.1	1.8	2.5	2.9	1.8	1.4	2.0	2.3
4	2.1	1.1	-0.3	+0.9	1.5	2.6	2.7	2.7	1.9	1.7	2.6	2.8
5	1.8	1.2	+0.5	2.6	2.7	3.3	3.1	2.3	1.6	1.9	3.0	3.2
6	1.7	1.9	1.8	3.8	3.7	4.0	3.3	1.9	1.6	2.3	3.5	3.5
7	1.2	2.2	3.1	5.0	4.7	4.1	2.9	1.5	1.5	2.4	3.8	3.7
8	1.1	2.8	4.1	5.7	5.2	4.2	2.6	1.4	1.4	2.6	3.8	4.3
9	0.9	3.2	5.0	5.9	5.3	3.8	2.1	1.0	1.2	2.5	4.0	4.7
10	1.2	3.4	5.3	5.7	5.3	3.2	1.7	0.7	0.9	2.3	4.1	4.8
11	1.2	3.0	5.2	5.3	4.7	2.4	1.1	0.2	0.5	2.2	4.1	4.6
12	1.3	2.6	4.5	4.4	4.0	2.0	0.8	+0.1	+0.3	1.7	3.3	3.7
13	1.5	1.6	3.6	3.7	3.3	1.8	0.8	0.0	-0.4	1.4	2.4	2.9
14	1.2	0.8	2.8	2.8	2.8	1.8	0.6	-0.5	0.9	+0.7	1.2	1.9
15	0.8	0.5	2.1	2.6	2.5	2.0	0.8	0.9	1.4	-0.2	0.3	1.5
16	0.2	0.4	1.6	2.4	2.6	2.2	0.7	1.4	1.9	1.1	0.1	1.3
17	0.4	0.9	1.7	2.7	2.8	2.1	+0.5	1.8	2.3	1.2	0.3	1.5
18	0.6	1.3	2.1	2.8	2.8	2.0	-0.1	2.2	1.8	1.0	1.0	1.6
19	1.1	2.1	2.4	2.7	2.6	1.5	0.4	2.0	-0.9	-0.1	1.4	1.6
20	1.8	2.4	2.4	2.4	2.5	0.8	0.8	-1.1	+0.5	+1.0	1.9	1.4
21	2.4	2.4	2.4	2.0	2.0	0.4	-0.5	+0.1	1.8	2.1	1.7	1.1
22	2.7	2.3	2.1	1.5	1.1	0.3	+0.1	1.8	2.1	2.6	1.8	0.8
23	1.9	1.9	1.7	+0.8	0.6	0.3	1.2	3.0	3.9	3.3	1.7	0.5
24	2.8	1.7	1.1	-0.2	+0.1	0.6	2.3	3.9	4.8	3.6	1.3	0.4
25	2.8	1.4	+0.6	0.8	-0.5	1.2	3.3	4.7	4.9	3.3	0.8	0.3
26	0.9	-0.3	1.5	0.8	1.7	3.7	5.2	4.8	2.9	0.3	0.4	0.4
27	0.5	0.5	0.8	2.2	1.1	1.8	4.0	5.4	4.5	2.3	0.3	0.5
28	+0.1	1.4	2.7	1.2	1.8	4.1	5.2	3.8	1.7	0.2	0.9	0.9
29	-0.3	2.1	2.9	1.0	1.8	4.2	5.0	3.0	1.3	0.2	1.1	1.1

Day of the Month.

1850.

Day of the Month.

1851.

Day of the Month.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	+0.5	+0.9	+0.6	+1.4	+1.7	+2.3	+2.6	+3.2	+4.1	+4.5	+4.2	+3.7
2	0.2	1.2	1.1	1.8	2.2	2.4	2.7	3.2	4.3	4.6	4.4	4.0
3	0.1	1.5	1.7	2.2	2.3	2.4	2.5	3.2	4.0	4.4	4.3	4.1
4	0.5	1.6	1.9	2.5	2.4	2.1	2.3	2.8	3.4	3.7	4.1	3.9
5	0.6	1.6	2.3	2.5	2.6	2.0	1.9	2.1	2.3	3.0	3.6	3.8
6	0.9	1.9	2.4	2.9	2.4	1.7	1.4	1.5	1.3	2.4	3.5	3.6
7	0.9	1.8	2.7	3.0	2.6	1.5	1.0	+0.9	+0.5	1.8	3.1	3.5
8	1.0	2.1	3.0	3.3	2.7	1.1	0.7	-0.1	-0.4	1.4	3.1	3.7
9	1.0	2.1	3.0	3.3	2.7	1.3	0.5	0.9	0.6	1.4	3.4	3.6
10	0.6	2.0	1.7	2.8	1.7	+0.1	1.5	0.7	1.5	1.5	3.5	3.5
11	+0.5	2.8	2.9	3.4	1.4	1.8	-0.3	1.6	-0.3	1.9	3.5	3.2
12	-0.4	2.6	3.7	3.0	1.2	2.4	1.5	+0.3	2.2	3.4	2.7	2.7
13	0.9	1.8	3.7	2.3	-0.3	3.0	4.0	2.3	0.0	1.0	2.4	1.1
14	1.0	-0.4	3.1	-1.1	+0.7	3.2	3.3	1.5	0.0	-0.6	2.1	2.1
15	+0.3	+0.8	1.9	+0.2	1.6	3.3	2.8	0.7	0.1	+0.1	1.9	3.2
16	+0.3	2.1	-0.2	1.5	2.3	2.8	1.8	0.2	0.8	1.3	3.4	3.9
17	1.1	3.0	+1.1	2.6	2.9	2.2	1.2	0.3	1.8	2.9	5.0	4.3
18	1.7	3.5	2.3	3.6	3.3	1.9	0.8	0.8	3.0	4.3	5.7	4.4
19	1.9	3.7	3.2	4.2	3.2	1.5	0.6	1.4	3.8	5.6	6.3	4.2
20	2.1	4.3	4.1	4.6	2.9	1.3	0.5	2.1	4.8	6.5	6.2	4.0
21	2.1	4.8	4.8	4.8	2.9	1.0	0.6	2.5	5.4	6.9	5.8	3.7
22	2.4	5.0	5.3	4.8	2.7	0.8	0.9	2.7	5.3	6.7	5.0	3.2
23	2.8	4.9	5.7	4.4	2.2	0.6	0.7	2.6	4.8	6.0	4.3	2.7
24	3.1	4.9	5.3	3.9	1.8	0.4	0.7	2.5	4.4	5.2	3.5	2.3
25	3.3	4.5	5.1	3.3	1.4	+0.1	+0.4	2.1	3.4	3.9	2.7	1.8
26	3.4	3.9	4.7	2.8	1.1	-0.3	0.0	1.6	2.9	2.0	1.3	1.3
27	3.4	3.4	4.0	2.5	1.0	0.3	-0.1	1.1	1.2	2.0	1.5	1.1
28	3.2	+3.2	3.5	2.4	1.0	0.4	0.3	0.5	0.4	1.4	1.3	0.7
29	3.1	3.2	3.2	2.5	1.1	-0.1	0.4	+0.1	0.3	1.0	0.9	0.5
30	3.1	3.4	+2.6	1.3	0.0	-0.1	0.0	-0.1	+0.2	1.0	+0.8	+0.2
31	+3.0	+3.1	+3.1	+1.4	+1.4	+1.4	+1.4	+1.4	+1.4	+1.4	+1.4	-0.1

1853.

Day of the Month.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.4	-1.1	+0.5	-0.7	-0.4	-0.8	-0.2	+0.2	-1.0	-2.5	-3.8	-2.8
2	0.3	2.1	-0.6	1.7	1.1	0.6	0.0	0.0	2.0	3.6	4.9	3.2
3	0.4	2.9	1.7	2.5	1.5	0.4	+0.1	-0.4	3.2	5.0	5.5	3.4
4	0.8	3.8	3.0	3.1	1.8	-0.2	0.3	0.9	4.4	5.9	5.6	3.5
5	1.3	4.4	4.0	3.4	1.7	+0.3	0.5	1.5	5.0	6.4	5.5	3.2
6	1.8	4.5	4.7	3.3	1.3	0.5	0.5	2.3	5.4	6.3	4.7	2.8
7	2.3	4.4	4.6	2.9	0.8	+0.1	2.8	5.1	5.8	4.5	2.5	2.3
8	2.8	3.9	4.3	2.4	-0.4	0.9	-0.2	2.9	4.4	5.1	3.5	1.7
9	3.0	3.3	3.7	1.9	0.0	0.7	0.5	2.7	3.3	4.0	2.3	1.0
10	3.1	2.7	3.0	1.2	+0.2	0.6	0.6	2.3	2.5	3.1	1.2	0.3
11	3.0	2.1	2.4	0.9	0.4	+0.4	0.9	1.6	1.6	2.0	-0.5	-0.2
12	2.8	1.8	1.9	0.7	+0.2	-0.2	0.9	1.0	-0.8	-0.7	+0.2	+0.2
13	2.5	1.3	1.4	0.5	-0.1	0.8	1.0	0.8	+0.1	+0.2	0.9	0.5
14	2.2	1.0	1.0	0.7	0.6	1.6	1.0	0.4	0.7	1.3	1.3	0.6
15	1.8	0.9	0.8	1.0	1.5	2.4	1.2	0.3	1.4	2.0	1.3	0.5
16	1.5	1.0	0.7	1.7	2.5	3.0	1.5	-0.2	1.8	2.4	1.1	+0.1
17	1.5	1.0	1.0	2.6	3.4	3.2	1.6	+0.1	1.9	2.3	+0.5	-0.2
18	1.4	1.1	1.4	3.3	3.9	3.2	1.7	+0.1	1.7	1.7	0.0	0.6
19	1.3	0.8	1.6	3.4	4.2	3.0	1.6	0.0	1.2	1.2	-0.3	1.2
20	1.0	-0.4	1.8	3.3	3.7	2.8	1.8	-0.5	0.4	0.6	0.4	1.6
21	-0.6	+0.6	1.7	2.5	2.9	2.7	2.1	0.8	0.1	0.3	0.3	1.9
22	+0.1	1.5	1.3	1.2	2.1	2.7	2.3	1.0	0.0	0.5	0.3	1.9
23	0.8	2.1	-0.1	-0.1	1.4	2.8	2.6	1.2	0.2	0.6	0.2	1.9
24	1.4	2.6	+1.0	+0.7	1.2	2.8	2.4	1.0	0.7	1.0	0.1	1.9
25	1.9	2.7	1.9	1.2	1.4	2.5	2.2	0.7	1.1	1.2	0.3	2.1
26	1.9	2.5	2.5	1.2	1.1	2.0	1.7	-0.1	1.2	1.2	0.4	2.1
27	1.6	2.0	2.7	1.0	0.8	1.6	1.1	+0.4	1.1	0.9	1.0	2.1
28	1.2	+1.5	2.5	0.8	0.4	1.1	0.6	0.6	+0.9	+0.3	1.4	1.9
29	0.6	0.6	2.1	0.6	0.4	0.8	-0.2	0.7	0.0	-0.8	1.1	1.9

1852.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
1	0.4	-0.7	-1.3	-0.5	+0.5	+1.3	+1.6	+1.6	+1.0	+1.3	+2.3	+2.6
2	0.5	-0.2	-1.0	+1.0	1.5	1.4	1.4	0.9	0.9	1.4	2.8	3.0
3	0.4	+0.7	+0.4	2.8	2.5	1.4	0.8	+0.2	0.8	2.1	4.0	3.5
4	-0.1	2.1	1.9	4.2	3.0	1.3	+0.3	-0.1	1.2	3.0	4.9	4.0
5	+0.6	3.4	4.0	5.3	3.4	1.1	0.0	-0.1	2.1	4.1	5.7	4.5
6	1.4	4.6	5.4	5.7	3.5	1.1	-0.4	+0.2	3.3	5.1	6.3	4.6
7	1.9	5.3	6.6	5.9	3.4	0.8	0.3	0.7	4.0	5.8	6.4	4.5
8	2.1	5.6	6.9	6.0	3.3	0.8	-0.1	1.7	4.6	6.3	6.0	3.9
9	2.4	5.8	7.0	5.6	3.2	0.6	+0.1	2.1	4.9	6.4	5.5	3.4
10	2.8	5.8	6.9	5.2	2.8	0.3	0.5	2.6	4.7	5.8	4.7	2.4
11	3.1	5.4	6.5	4.5	2.2	0.4	0.8	2.6	4.0	4.9	3.4	1.5
12	3.5	4.5	5.7	3.6	1.6	0.5	1.2	2.5	3.1	3.9	1.9	+0.5
13	4.0	4.0	4.8	2.6	1.2	0.6	1.2	2.2	2.3	2.6	+0.4	-0.1
14	4.8	3.4	3.8	1.7	0.7	0.8	1.4	2.0	1.2	+1.1	-0.7	0.4
15	5.5	2.4	2.7	0.9	0.5	1.3	1.5	1.2	+0.2	-0.4	1.4	0.6
16	5.4	0.8	1.6	0.5	0.9	1.8	1.6	0.5	-0.6	1.4	1.8	0.5
17	5.1	0.6	0.3	0.7	1.7	2.6	1.5	0.3	1.1	2.1	1.7	0.3
18	2.8	0.3	0.1	1.1	2.3	2.7	1.6	0.3	1.1	2.1	1.5	+0.1
19	1.6	+0.1	0.0	1.3	2.7	3.0	1.9	0.6	0.8	1.6	1.0	0.2
20	1.2	-0.1	0.0	1.7	3.0	3.3	2.4	1.0	-0.3	1.1	0.7	0.4
21	1.0	0.2	0.0	2.1	3.1	3.5	2.9	1.3	+0.1	0.8	-0.3	0.9
22	1.8	0.3	0.4	2.0	3.2	3.6	3.1	1.4	0.6	-0.2	+0.3	1.2
23	0.5	0.3	0.4	1.7	2.9	3.6	3.2	1.9	1.4	+0.4	0.8	2.0
24	0.3	+0.4	+0.4	1.5	2.7	3.3	3.0	2.2	1.7	0.7	1.2	2.6
25	+0.3	0.9	0.0	0.8	2.2	2.9	2.7	2.5	2.0	0.9	1.5	3.1
26	+0.1	1.1	-0.2	+0.2	1.6	2.2	2.6	2.8	2.1	1.4	1.9	3.3
27	-0.4	1.2	0.8	-0.5	1.1	2.0	2.6	2.9	1.9	1.5	1.9	3.3
28	0.5	-1.6	1.3	0.6	0.8	1.6	2.7	2.5	1.5	1.4	2.1	2.6

1855.

Day of Month	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	-1.1	-2.0	-2.2	-0.1	+1.0	+1.5	+0.5	-2.3	-5.3	-5.6	-3.7	-1.7
2	1.3	2.2	1.7	+0.8	1.8	1.8	+0.4	2.9	5.0	5.3	3.1	1.1
3	1.8	2.0	1.0	1.2	2.2	1.9	0.0	3.2	4.5	4.6	2.5	0.5
4	2.3	2.0	0.7	1.4	2.4	1.9	-0.2	3.1	4.0	4.0	2.1	-0.2
5	2.7	2.2	0.4	1.4	2.3	1.9	0.2	2.7	3.4	3.5	1.7	+0.1
6	3.0	2.4	0.4	1.1	2.2	1.5	0.6	2.3	3.2	3.1	1.5	+0.1
7	3.2	2.4	0.6	+0.7	1.8	+0.9	0.7	2.1	2.7	2.7	1.2	0.0
8	3.2	2.5	0.8	0.0	1.3	0.0	0.9	2.0	2.7	2.4	1.1	-0.2
9	2.8	2.7	1.3	-0.5	+0.3	-0.9	1.2	2.2	2.3	2.3	1.4	0.6
10	2.6	2.8	1.7	1.5	-0.9	1.6	1.6	2.0	2.2	2.1	1.5	0.8
11	2.4	2.7	2.0	2.3	2.1	2.4	1.9	1.9	2.3	1.9	1.7	1.0
12	2.1	2.4	2.4	3.2	3.1	2.7	2.0	1.9	2.0	1.8	1.8	1.2
13	2.0	2.2	2.8	3.9	3.6	2.7	2.0	1.9	1.7	1.7	1.6	0.8
14	1.6	1.7	3.1	4.2	3.9	2.7	2.1	1.8	1.0	1.2	1.1	0.8
15	1.2	-0.7	3.1	3.9	3.8	2.7	2.2	1.5	-0.4	-0.6	-0.5	0.7
16	-0.6	+0.1	2.7	3.3	3.5	2.7	2.2	1.1	+0.6	+0.3	+0.1	1.0
17	+0.2	0.9	2.1	2.8	3.1	2.8	1.9	-0.5	1.6	1.3	0.4	1.4
18	1.1	1.2	1.3	2.4	2.9	2.7	1.7	+0.5	2.6	2.2	0.7	1.7
19	1.7	1.5	0.7	1.8	2.8	2.5	1.3	1.3	3.5	2.9	0.7	1.9
20	1.8	1.9	-0.1	1.4	2.6	2.4	0.8	2.1	3.9	3.2	0.6	1.9
21	1.9	1.7	+0.4	1.5	2.8	2.1	-0.2	2.8	4.1	3.3	0.4	1.8
22	1.9	1.3	0.7	1.8	2.8	2.0	+0.4	3.0	4.1	2.9	+0.1	1.8
23	1.6	+0.6	+0.4	2.2	3.0	1.9	0.8	3.1	3.9	2.4	-0.5	1.9
24	1.1	-0.3	-0.1	2.7	3.1	1.6	0.8	3.0	2.9	1.6	1.3	2.0
25	+0.5	1.0	0.9	3.0	3.1	1.4	0.7	2.8	+1.5	+0.2	2.0	2.3
26	-0.2	1.6	1.7	3.1	2.9	1.1	0.9	2.0	-0.1	-1.3	2.9	2.4
27	0.9	2.3	2.3	2.9	2.4	-0.7	1.0	+0.8	2.1	2.9	3.4	2.3
28	1.5	-2.5	2.7	2.3	1.7	0.0	0.8	-0.6	4.0	4.1	3.4	2.1
29	2.0		2.6	1.2	-0.7	+0.5	+0.5	2.4	5.1	4.4	3.0	1.4
30	2.2		2.1	-0.2	+0.2	+0.6	-0.3	4.1	-5.7	4.6	-2.4	0.9
31	-2.2		-1.2		+1.0		-1.4	-5.0		-4.3		-0.2

1854.

Days of Month	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	-1.8	+0.6	-0.1	+0.2	-0.8	-2.3	-2.3	-0.8	+2.0	+2.6	+2.6	+0.8
2	1.5	1.2	+0.7	+0.3	1.3	2.7	2.4	-0.2	2.6	3.3	2.9	1.1
3	0.9	1.5	1.3	-0.1	1.7	3.3	2.5	+0.2	3.2	3.7	2.9	0.9
4	0.4	1.5	1.6	0.7	2.4	3.9	2.5	0.5	3.4	4.0	2.6	+0.3
5	0.1	1.1	1.3	1.3	3.3	4.5	2.5	1.0	3.4	3.6	1.7	-0.6
6	0.1	0.6	0.7	2.1	4.0	4.7	2.4	1.3	2.8	3.1	+0.5	1.3
7	0.0	+0.2	+0.2	2.8	4.5	4.4	2.0	1.5	2.1	1.8	-0.7	2.2
8	0.1	-0.1	-0.5	3.1	4.5	3.6	1.2	1.1	+0.9	+0.7	1.7	2.6
9	0.1	0.4	1.1	2.9	4.3	2.6	0.7	+0.3	-0.2	-0.7	2.4	2.8
10	-0.1	-0.1	1.4	2.4	3.3	1.6	0.5	-0.4	1.2	1.6	2.5	2.7
11	0.0	+0.1	1.0	1.6	2.2	0.7	0.5	1.3	1.9	2.2	2.4	2.6
12	0.0	0.4	-0.5	-0.6	1.2	-0.2	0.7	1.8	2.1	2.4	2.2	2.2
13	+0.2	0.5	+0.1	+0.2	0.0	0.0	1.1	1.7	2.2	2.3	1.9	1.8
14	+0.1	+0.4	0.6	0.8	+0.8	+0.3	1.0	1.6	2.0	2.1	1.7	1.5
15	-0.5	0.9	0.8	1.4	1.4	0.9	-0.3	1.2	2.2	2.1	1.8	1.3
16	1.1	1.6	0.5	1.1	1.7	1.2	0.0	1.1	2.3	2.3	2.3	1.5
17	1.9	2.3	+0.1	1.0	1.8	1.2	+0.1	1.4	2.6	2.6	2.6	1.2
18	2.3	2.8	-0.3	+0.4	1.3	0.9	+0.1	1.7	2.8	3.2	2.9	0.9
19	2.8	3.2	0.8	-0.3	0.8	0.8	-0.1	2.1	3.4	3.6	3.3	0.5
20	3.1	3.7	1.4	1.1	+0.3	0.5	0.4	2.3	4.1	4.2	3.4	-0.5
21	3.4	4.2	2.3	1.8	-0.2	+0.1	0.8	2.7	4.5	4.7	3.5	0.0
22	3.6	4.6	3.9	2.2	0.4	0.4	1.4	3.5	5.2	5.0	2.2	0.3
23	3.4	4.2	4.3	1.9	0.6	0.7	1.9	3.7	4.9	4.4	1.5	0.2
24	3.1	3.3	3.9	1.4	0.7	1.1	2.1	3.8	4.3	3.5	0.8	+0.1
25	2.7	2.2	3.1	1.2	0.7	1.3	2.4	3.4	3.0	1.9	-0.4	-0.1
26	2.7	1.2	2.3	0.8	0.8	1.7	2.4	2.8	1.3	-0.7	+0.1	0.4
27	2.3	1.4	0.7	1.1	2.0	2.4	1.7	+0.3	+0.3	0.4	0.7	0.8
28	1.7	0.7	1.7	-0.7	1.7	-2.1	1.9	-0.6	1.6	1.4	+0.7	0.8
29	0.0		-0.1		-2.0		-1.4	+0.8		+1.9		-1.0

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